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OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. *S. Amer. Soc.*

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X X

X, A double conſonant, and the twenty-ſecond letter in the Engliſh alphabet; which, however, begins no Engliſh word.

The *x* of the Latins, and ξ of the Greeks, are compounded of *c s*, and κ σ; whence, to this day, the letter *x* in the Engliſh and French has the ſame ſound with *c s*, or *k s*. Thus we pronounce *Alexander* exactly as if written *Alecſander* or *Alekſander*.

The Italians have no *x* at all in their language, but both ſpeak and write *Aleſſandro*. The Spaniards pronounce the *x* like our *c* before *a*; viz. *Alexandro*, as if it were *Alecandro*. The Portugueſe pronounce it like *ſh*.

In foreign words, uſed in Engliſh, we ſometimes ſoften the *x* into a double *s*; as *Bruſſels*, for *Bruxelles*, &c.

The letter is not known in the Hebrew, or other oriental languages; but in lieu of it, they write the two ſimple letters of which it is compounded. And the like do the modern Germans.

Peter Diaconus relates, that the letter X was introduced into the Roman alphabet in the time of Auguſtus; and that, before his reign, the Romans ſupplied the want of it by the letters C and S. But Mr. Aſtle obſerves, that this is a miſtake; the letter X being found in the Duilean pillar, inſcribed in the year of Rome 494, and 259 before Chriſt. Origin and Progreſs of Writing, p. 78.

X is alſo a numeral letter, and ſignifies ten; as repreſenting two V's placed one at top of the other. See V.

X *Supra denos numero tibi dat retinendos.*

When laid flat, thus ⋈, it ſignifies a thouſand; and when a daſh is added over it, $\overline{\text{X}}$, it ſignifies ten thouſand. I before X denotes the ſubtraction, and after X the addition of unit: thus, IX = 9, and XI = 11. X before L or C denotes the ſubtraction of 10 from 50, or 100: thus, XL = 40, and XC = 90.

X on the French coins denotes thoſe ſtruck at Amiens.

We often meet with the Greek letters X and P joined in this manner ☧ on ancient medals. The firſt we find are on ſome large braſs coins of the Ptolemies, kings of Egypt, where it was placed on a civil account.

Some writers have taken it for a date, and others for the initial letters of a proper name; but as no reaſons are aſſigned for either of thoſe conjectures, Mr. Ward rather ſuppoſes it an abbreviation of the word XPHMA, *money*, impreſſed on thoſe pieces, to denote their currency as money; which might be thought proper, as they have not the heads of kings ſtamped upon them, like their ſilver and gold coins; but always that of a Jupiter on the front, and an eagle perched on a thunderbolt on the reverſe.

This character was afterwards applied to a very different purpoſe by Conſtantine the Great, who made uſe of it to denote XPICTOC, both in his coins and military enſigns; in which he was followed not only by ſome ſucceeding emperors, but alſo by private perſons, who out of devotion put it on their lamps and other utenſils.

It afterwards came to be uſed merely as a critical note, to point out remarkable paſſages in manuſcripts; and then it ſtood for the initials of XPHCIMON, *uſeful;* as we learn from Iſidore, Orig. lib. i. cap. 20. See Phil. Tranſ. N° 474. ſect. 1.

X, with a P, or Greek R, in the middle of it, is alſo the monogram of the name of CHRIST, which conſtantly occurs in the catacombs or burial-places of the ancient Chriſtians, and which was the chief ornament of the Labarum or military ſtandard of Conſtantine, and the ſucceeding emperors. See LABARUM.

XABEA, in *Geography*, a fea-port of Spain, in the province of Valencia, near the coaft of the Mediterranean; 38 miles N.N.E. of Alicant.

XABORECTORA, in *Ancient Geography*, a name given by P. Mela to Aborras, a river of Mefopotamia.

XACA, in *Geography*. See JACA.

XACRE, a cape on the fouth-eaft coaft of the ifland of Candia; 18 miles S.E. of Settia.

XAGUA BAY, a large bay on the fouth coaft of the ifland of Cuba. This is one of the beft ports in the Weft Indies, and is 15 miles in circumference, furrounded with mountains, which break off the force of the winds. N. lat. 22° 10′. W. long. 81° 20′.

XAINTES, SANTOS, or *All-Saints' Iflands*, as having been difcovered on that holiday by the Spaniards; three fmall iflands in the Weft Indies, fituated to the fouth-eaft of Guadaloupe. The moft wefterly of them is called Terra de Bas, or the Low ifland, and the moft eafterly, Terra de Haut, or the High ifland. The third, which lies exactly in the middle between the other two, feems to be nothing more than a large barren rock, but is of ufe in affifting to form a very good harbour. The ifland of Terra de Bas is about nine miles in circumference, but the other is larger. Thefe iflands have conftantly a frefh breeze, let the wind blow from what quarter it may: and on the Terra de Bas is a neat wooden church, with two very convenient creeks both for anchorage and landing. They are about fix miles diftant from Gaudaloupe, and 15 from Mariegalante. N. lat. 15° 56′. W. long. 61° 32′.

XALAPA, a confiderable town of Mexico, or New Spain, in the fertile province of Tlafcala, formerly famous for the fair held on the arrival of the ftated fleets from Europe; and fince the declared freedom of commerce, a confiderable mart for European commodities. It is fituated on the fouthern fkirts of a mountain, in a beautiful climate, the foil being partly clay and partly ftony, while pure waters iffue from a white fand, and fertilize the country. The population confifts of 243 Spanifh families, 182 Meftizos, and 361 Indians. When north winds prevail at Vera Cruz, it always rains at Xalapa; but the climate is efteemed very healthy. The purging powder of the country is made of the root of a plant, to which the town gives the name of Jalap; 30 miles E. of Puebla de los Angelos. N. lat. 19° 50′. W. long. 98° 26′.

XALISCO, a province of Mexico, in the audience of Guadalajara. It is wafhed by the South Pacific ocean on the fouth and weft; bounded on the eaft by Guadalajara Proper and Mechoacan; and feparated from Chiametlan on the north, by a narrow ftrip of land belonging to Guadalajara, and running out into the fea. It is not above fifty leagues in extent either way. It abounds with Indian wheat and filver mines, but has very few cattle of any fort. From this province is brought the oil of the infernal fig-tree, as the Spaniards call it, much ufed in medicine.

XALISCO, a town of Mexico, which gives name to a province; 9 miles N.W. of Compoftella Nueva. N. lat. 21° 25′. W. long. 106° 26′.

XALON, a river of Spain, which rifes in a mountain near Medina Celi, and runs into the Ebro, about fix miles above Saragoffa.

XAMACA, a river of America, which runs into the gulf of Mexico, 13 miles from Vera Cruz.

XAMBRINA, a town of Spain, in the province of Leon; 2 miles S.E. of Tordefillas.

XAMDELLILAH, an Arabian term, ufed as a grace or thankfgiving after meat.

The greateft men of that nation will often call in the meaneft, even the beggars, to eat with them; who, as foon as they have done, always rife and pronounce this word, which fignifies, God be praifed. Pococke's Egypt, p. 183.

XAMI, a name given by fome of the old writers to the *ceration* of the Greeks, or carob-tree. See CHARNUB.

XAN, in *Geography*, a river of the principality of Georgia, which runs into the Kur, 6 miles E. of Gory.

XANGA, a river of Africa, in the kingdom of Mongallo, which runs into the Indian fea, oppofite to the ifland of the fame name.—Alfo, one of the Querimba iflands in the Indian fea, near the coaft of Africa. S. lat. 10° 45′.

XANILA, a town of Fezzan, in the road to Egypt; 140 miles E.N.E. of Mourzouk.

XANQUE, or GUYAPO, a river of Mexico, which runs into the Spanifh Maine, 30 miles W. of Cape Camaron.

XANTEN, or SANTEN, a town of France, in the department of the Roer, near the Rhine; 7 miles N.E. of Gueldres.

XANTHE, in *Botany*, fo called from ξανθος, *yellow*, in allufion to its yellow juice.—Schreb. Gen. 710. Willd. Sp. Pl. v. 4. 877. Mart. Mill. Dict. v. 4. (Quapoya; Aubl. Guian. 897. Juff. 256. Lamarck Dict. v. 6. 21. Illuftr. t. 831.)—Clafs and order, *Dioecia Monadelphia*. Nat. Ord. *Guttiferæ*, Juff.

Gen. Ch. Male, *Cal.* Perianth of one leaf, in five or fix fmall, deep, imbricated, roundifh, concave, acute fegments, with a pair of minute oppofite fcales at the bafe. *Cor.* Petals five, roundifh, fpreading, larger than the calyx. *Stam.* Filament one, columnar, erect; anthers five, two-lobed, forming a peltate concave difk, full of gluten, their under fide burfting, and difcharging the pollen.

Female, *Cal.* like that of the male, permanent, inferior. *Cor.* as in the male. *Stam.* Filament none; anthers five, prifmatic, erect, imperfect. *Pift.* Germen fuperior, roundifh, with five furrows; ftyle none; ftigmas five, roundifh, thick, emarginate, feated on the germen. *Peric.* Capfule fmall, globofe or oval, with five furrows, five cells, and five valves, burfting at the furrows, their membranous partitions adhering to the central column. *Seeds* numerous, oblong, imbedded in the pulp, inferted in a double row upon the five-angled columnar receptacle.

Obf. It appears that one-fifth is frequently added to the parts of fructification, in the male as well as female flowers.

Eff. Ch. Male, Calyx in five deep fegments. Petals five. Filament columnar. Anthers five, two-lobed, forming a peltate difk.

Female, Calyx and Corolla like the male. Stigmas five, feffile. Capfule of five cells, with many pulpy feeds.

1. X. *fcandens.* Twining Xanthe. Willd. n. 1. (Quapoya fcandens; Aubl. Guian. 898. t. 343.)—Leaves obovate, flefhy. Capfule globofe.—Native of the forefts of Guiana, flowering in November. The *ftem* is fhrubby, with knotty branches, twining round neighbouring trees. *Leaves* oppofite, on fhort ftalks, fimple, entire, thick, and fmooth, three or four inches long, with a thick mid-rib, and a fhort blunt point, but no branching veins. *Panicles* at the ends of the drooping branches, compound, three-forked, fmooth. *Flowers* fmall, yellow; their partial ftalks longer than the calyx. *Petals* flefhy. *Capfule* about the fize of a black currant, flefhy, crowned with the black *ftigmas* all meeting in a point. *Seeds* red. Every part of the plant, when wounded, difcharges a tranfparent, white, vifcid, refinous juice. The Indians call this fpecies *Quapoy.* See QUAPOYA.

2. X. *par-*

2. X. *parviflora.* Small-flowered Xanthe. Willd. n. 2. (Quapoya Pana-panari; Aubl. Guian. 900. t. 344.)—Leaves elliptic-oblong. Flowers nearly sessile. Capsule elliptical. —Native of the same country. Differs from the preceding in having thinner *leaves;* smaller *flowers,* with shorter partial stalks; and an oblong, thicker, yellowish *fruit.* The *bark* and *leaves,* if cut or broken, discharge a yellow glutinous juice, which, when dried, resembles Gamboge, and is, like that substance, soluble in water. *Aublet.*

XANTHICA, Ξανθικα, in *Antiquity*, a Macedonian festival, so called because it was observed in the month Xanthus, at which time the whole royal family with the army was purified. See LUSTRATION.

XANTHIUM, in *Botany*, most unquestionably the ξανθιον of Dioscorides, book 4. chap. 138, as appears by his very apt description, owes its name to the use made of unripe fruit by the Greeks, to dye the hair yellow. Our common English species, *X. strumarium*, is evidently the identical plant of Dioscorides, and its specific name alludes to a reputed virtue of curing tumours.—Linn. Gen. 487. Schreb. 635. Willd. Sp. Pl. v. 4. 373. Mart. Mill. Dict. v. 4. Sm. Fl. Brit. 1017. Prodr. Fl. Græc. Sibth. v. 2. 234. Ait. Hort. Kew. v. 5. 268. Pursh 581. Juss. 191. Tourn. t. 252. Lamarck Illustr. t. 765. Gærtn. t. 164.—Class and order, *Monoecia Pentandria.* Nat. Ord. *Compositæ nucamentaceæ*, Linn. *Corymbiferæ anomalæ*, Juss.

Gen. Ch. Male flowers compound. *Common Calyx* of many imbricated, slender, equal scales, as long as the numerous florets. *Cor.* compound, uniform, equal, hemispherical, consisting of numerous, tubular, funnel-shaped, monopetalous, upright, five-cleft florets. *Stam.* Filaments in each floret five, united into a cylinder; anthers erect, parallel, distinct. *Common Receptacle* small, with chaffy scales between the florets.

Female flowers below the male, on the same plant, doubled. *Cal.* Involucrum two-flowered, of two opposite, acutely three-lobed leaves, (their middle lobe longest,) beset with hooked prickles, and closely enfolding, as well as united to, the germen, except the lobes, which are free. *Cor.* none. *Pist.* Germen oval, hispid; styles two pair, capillary; stigmas simple. *Peric.* Drupa dry, ovate-oblong, cloven at the point, clothed all over with hooked prickles. *Seed.* Nut of two cells.

Ess. Ch. Male, Common Calyx imbricated. Florets of one petal, funnel-shaped, five-cleft. Receptacle chaffy.

Female, Calyx two-leaved, two-flowered. Corolla none. Drupa dry, muricated, cloven. Nut of two cells.

Obs. Linnæus remarks, that the fruit of *Xanthium* could scarcely have been well understood, without a previous knowledge of that of *Ambrosia.* These genera in fact belong to that ambiguous tribe, whose habit, qualities, and in part the structure of their male flowers, all associate them with the compound or syngenesious order; while the disunion of their flowers, and the general nature of their female flowers, and fruit, necessarily refer them to the *Diclines*, or in the artificial system of Linnæus, the class *Monoecia.*

1. X. *Strumarium.* Common Burweed, or Small Burdock. Linn. Sp. Pl. 1400. Willd. n. 1. Ait. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 2544. Fl. Dan. t. 970. Bigelow Bost. 221. (Xanthium; Fuch's Hist. 579. Camer. Epit. 926. X. seu Lappa minor; Matth. Valgr. v. 2. 545. Bardana minor; Ger. Em. 809.)—Stem without thorns. Leaves heart-shaped; three-ribbed at the base.—Native of dung-hills, and rich moist ground, in various countries of Europe, as well as North America, flowering towards autumn. In this island it is of very rare occurrence, though occasionally met with about London, and in the west. Dr. Sibthorp noticed the plant in many parts of Greece, where the soil is rich and rather wet, and found it called, by the modern Greeks, κολλητζίδα; a name alluding to its bur-like property, rather than to the quality on which its ancient appellation is founded. The *root* is annual. *Herb* branched, rough, dark green, rather fœtid, of a coarse rank habit, with furrowed, rather hairy, *branches.* *Leaves* alternate, stalked, heart-shaped, acutely lobed, and toothed or serrated; their two lateral ribs marginal, for a small space, at the base, as in the great Burdock, *Arctium Lappa,* and a few other plants. *Male flowers* globular, green, few together, in axillary or terminal *clusters,* about the upper part of the branches; *female* in axillary sessile tufts. *Fruit* elliptical, double-pointed, hard, near an inch long, beset with firm, prominent, awl-shaped, hooked prickles, which attach themselves to the coats of animals, and thus serve to disperse the *seeds.*

2. X. *orientale.* Oriental Burweed. Linn. Sp. Pl. 1400. Willd. n. 2. Ait. n. 2? Linn. Fil. Dec. 33. t. 17. "Schkuhr Handb. v. 3. 239. t. 291."—Stem without thorns. Leaves ovate, slightly three-lobed, somewhat triple-ribbed; wedge-shaped at the base.—Native of Ceylon, Japan, and China, from which last country it was imported, according to the younger Linnæus, with other seeds for the Upsal garden, in 1761. Sir Hans Sloane is recorded by Ray as having introduced this *Xanthium* into England in 1685; but their plant seems to have been a slight variety of the first, figured by Morison, sect. 15. t. 2. f. 2, found in America, and not answering to the distinctive characters of the present species, though Morison, and others who speak of this variety, are cited by Linnæus and Willdenow. The true *X. orientale* is an annual herb, of a more slender habit than the *Strumarium,* and more harsh, though less hairy. Their essential differences are indicated in our specific characters. The most remarkable seems to be the taper base of the *leaves,* in the present species, and the union of their three ribs, at a greater or less distance, above the insertion of the *footstalk.* The *fruit* is twice as large as the foregoing, with peculiarly strongly hooked thorns.

3. X. *echinatum.* Compound-thorned Burweed. "Murray in Comm. Goett. for 1784, with a figure." Willd. n. 3.—"Stem without thorns. Fruit oval; its prickles hooked, crowded, compound at the base." Annual.—Its native country unknown. *Willdenow.* We have not seen either a specimen or figure.

4. X. *spinosum.* Spinous Burweed. Linn. Sp. Pl. 1400. Willd. n. 4. Ait. n. 3. (X. spinosum, atriplicis folio; Moris. sect. 15. t. 2. f. 3. X. lusitanicum spinosum; Herm. Parad. 246, with a figure. Volkam. Norib. 404, with a figure. X. lusitanicum, laciniatum, validissimis aculeis munitum; Magnol. Hort. 208. t. 20.)—Stipulas thorny, three-cleft. Leaves lanceolate, three-lobed; hoary beneath.—Native of the south of France, as well as of Italy, Spain, and Portugal. It might be raised here as a tender annual, and planted out in a border, were there sufficient beauty in its copious, long, flame-coloured thorns, to entitle it to a place in the flower-garden. The *leaves* are not inelegant. Their upper surface is of a fine green, nearly smooth; the lower downy and white. The *thorns* are in fact *stipulas,* an inch long, very sharp, standing in pairs at the base of each *footstalk,* separating just above their origin into three spreading needle-like points. *Flowers* small and inconsiderable. *Fruit* oval, covered with copious,

copious, ſmall, hooked prickles. The wild plant makes a conſpicuous appearance in winter, on banks about Montpellier.

For *X. fruticoſum*, Linn. Suppl. 418, ſee FRANSERIA.

XANTHIUM, in *Agriculture*, a term under which the leſſer burdock is ſometimes known by writers, and which is found to be a very troubleſome weed. See WEED.

XANTHOCHYMUS, in *Botany*, received that name, either from Dr. Roxburgh or Mr. Dryander, in alluſion to the remarkable yellow juice of its fruit; the word being compounded of ξανθος, *yellow*, and χυμος, *juice*.—Roxb. Coromand. v. 2. 51. Ait. Hort. Kew. v. 4. 420.—Claſs and order, *Polyadelphia Polyandria*. Nat. Ord. *Guttiferæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five roundiſh, unequal, obtuſe, flattiſh, ſpreading, ſlightly imbricated, permanent leaves. *Cor.* Petals five, orbicular, nearly ſeſſile, oppoſite to the calyx-leaves, and twice as long. Nectary of five broad, ſhort, abrupt, porous glands, oppoſite to the petals, alternate with the ſtamens, inſerted into the receptacle under the germen. *Stam.* Filaments twenty, united into five oblong, linear, flat bodies, alternate with the nectaries, and above twice as long; anthers ſtalked, roundiſh, of two lobes and two cells. *Piſt.* Germen ſuperior, globoſe; ſtyle ſcarcely any; ſtigmas five, ſpreading horizontally, obtuſe, deciduous. *Peric.* Berry globoſe, ſucculent, with five ovate *ſeeds*, immerſed in the pulp, ſome of which are generally abortive.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectaries five, abrupt. Stamens united into five ſets, alternate with the nectaries. Berry with from one to five ſeeds.

1. X. *pictorius*. Painter's Golden-apple. Roxb. Coromand. v. 2. 51. t. 196. Ait. n. 1.—Native of moiſt valleys, among the Circar mountains of Hindooſtan, flowering in the hot ſeaſon, and ripening fruit in November, December, and January. A large *tree*, whoſe tall trunk is covered with dark rough bark, and whoſe numerous, ſmooth, rather angular *branches* form an ample evergreen head. *Leaves* oppoſite, ſtalked, about a foot long and two or three inches broad, elliptic-oblong, acute, entire, coriaceous, ſmooth, and ſhining, with a ſtrong mid-rib, and many tranſverſe, parallel, fine, interbranching veins. *Footſtalks* an inch in length, angular, channelled, corrugated. *Stipulas* none. *Flowers* an inch in diameter, five or ſix together, in ſtalked umbels, each umbel oppoſite to a leaf, or ſituated nearly where a laſt-year's leaf has been. *Partial ſtalks* ſimple, ſmooth, near two inches long. *Petals* white. *Stamens* and *Piſtil* green. *Nectaries* and *Anthers* yellow. *Fruit* globular, drooping, ſomewhat pointed, orange-coloured, ſmooth, two inches or more in diameter. *Seeds* about the ſize and ſhape of almonds.

"The ripe apples," ſays Dr. Roxburgh, "are eaten by the natives. They are very inviting to the eye, and in taſte little inferior to many of our apples in England. I have no doubt, if meliorated by culture, they would prove a delicious fruit." The green, but full-grown, fruit yields a large quantity of a gum, very like *Gummi Guttæ*, Gamboge. The beſt way to obtain it is by cutting the apples acroſs, and to ſcrape off the juice, as it rapidly iſſues. When recent, it is of the conſiſtence of very rich cream, bright yellow, conſiderably acrid, and ſomewhat nauſeous to the taſte. In a few days it hardens, and becomes leſs acrid. It makes a pretty good water-colour, either by itſelf, as a yellow, or mixed with other colours, to form green, &c. It has no particular ſmell when burnt. A milky juice exudes from the bark of this tree when wounded, which ſoon thickens, and in thickening aſſumes a yellow tint. It has no ſmell, and, when firſt taken into the mouth, little taſte; but after a while, a ſenſe of dryneſs and acrimony extends a little way down the throat. This juice, like that obtained from the fruit, is imperfectly ſoluble in ſpirits. *Roxburgh.*

The tree above deſcribed is no very remote relation of the Mangoſteen, the moſt delicious fruit of India; ſo that Dr. Roxburgh's advice of improving it by culture may be well worthy the attention of horticulturiſts, if any be found in that part of the world where ſuch experiments are practicable. The moſt obvious would be to obtain pollen of the Mangoſteen, which, like that of many other plants, would probably bear carriage, and to impregnate with it ſome flowers of the *Xanthochymus*, whoſe progeny might thence perhaps be much altered.

XANTHON, a name given by ſome of the ancients to a ſpecies of marble of a yellowiſh-green colour, much uſed in ornamenting the inner parts of houſes; and from its equal hardneſs with the Tænarian marble, and the equal high poliſh it was capable of, ſuppoſed by the workmen to be of the ſame ſpecies.

The word *xanthon* is of very dubious meaning, but is ſuppoſed as the name of this marble to have expreſſed a green colour, as this was otherwiſe called *marmor herboſum*. See TÆNARIUM and HERBOSUM *Marmor*.

XANTHORRHIZA, in *Botany*, received its name from the late M. L'Heritier; ξανθος, *yellow*, and ῥιζα, *a root*, alluding to the colour of that part. We follow Marſhall, Schreber, and Martyn, in correcting the original orthography.—Schreb. Gen. 727. Mart. Mill. Dict. v. 4. Lamarck Illuſtr. t. 854. (Zanthorhiza; L'Herit. Stirp. Nov. 79. Willd. Sp. Pl. v. 1. 1568. Ait. Hort. Kew. v. 2. 199. Purſh 212. Juſſ. 234. De Cand. Syſt. v. 1. 386. Poiret in Lamarck Dict. v. 8. 838.)—Claſs and order, *Pentandria Polygynia*. (Polygamia Monoecia; *Schreb.*) Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Candolle.

Gen. Ch. *Cal.* none; unleſs, with the French botaniſts, we take the corolla for ſuch. *Cor.* Petals five, ovate, acute, ſpreading, deciduous. Nectaries five, abrupt, two-lobed, ſpreading, inſerted into the receptacle, alternate with the petals, and about half as long. *Stam.* Filaments five to ten, awl-ſhaped, very ſhort; anthers roundiſh. *Piſt.* Germens ſeveral, ſeven to eleven, ſuperior, oblong; ſtyles awl-ſhaped, incurved; ſtigmas acute. *Peric.* Capſules as many, inflated, ovate-oblong, bluntiſh and compreſſed at the top, where they burſt, terminated obliquely by the ſtyles, each of one cell and two valves. *Seeds* ſolitary, oblong, compreſſed, ſmall, pendulous from the top of the capſule.

Obſ. Many of the flowers want either the ſtamens or piſtils.

Eſſ. Ch. Calyx none. Petals five. Nectaries five, abrupt, ſtalked. Capſules five, or more. Seeds ſolitary, pendulous.

1. X. *apiifolia*. Parſley-leaved Yellow-root. (Zanthorhiza apiifolia; L'Herit. Stirp. Nov. 79. t. 38. Willd. n. 1. Ait. n. 1. De Cand. n. 1. Purſh n. 1.)—Native of ſhady banks of rivers, from Virginia to Georgia, flowering in May. *Purſh.* Mr. Aiton ſays it was introduced, about the year 1766, by John Buſh, eſq. into the Engliſh gardens, where it is hardy, flowering in the early ſpring. Here it flowered unnoticed, or at leaſt undeſcribed, till M. L'Heritier publiſhed his magnificent and learned work. The *ſtem* is ſhrubby, buſhy, about a yard high, each branch crowned with a tuft of dark green, ſmooth, ſhining, long-ſtalked, pinnated *leaves*, whoſe *leaflets*, an inch or an inch and half long, are acute, rhomboid-lanceolate, ſharply and unequally ſerrated in their fore-part. *Flowers* in long panicled *cluſters*, from the ſame

ſame bud as the leaves, of a dark copper-coloured purple, like *Veratrum nigrum*, and though not gay or brilliant, not inelegant, when contraſted with the foliage. The *root* and *ſtem* are internally of a bright lemon-colour. The affinity of this plant to *Cimicifuga*, *Actæa*, *Helleborus*, &c. would lead us to ſuſpect, though there is no remarkable fetor, that its properties might be active, and accordingly it ſeems that the American phyſicians have employed it ſucceſsfully in practice, as a tonic or ſtimulant. Probably its qualities may not be diſſimilar from thoſe of *Helleborus trifolius* of Linnæus; *Coptis trifolia*, Saliſb. Tr. of Linn. Soc. v. 8. 305. Purſh 390. Bigelow Am. Med. Bot. v. 1. 60. t. 5; the root of which the laſt-mentioned writer informs us is purely and intenſely bitter, ſtrengthening the ſtomach and other viſcera, and promoting digeſtion. It makes a yellow tincture, like that of Gentian in flavour and medical virtues.

XANTHORRHŒA, from ξανθος, *yellow*, and ῥεω, *to flow*, a name given by the writer of this to the Yellow Gum plant of New Holland, which conſtitutes a moſt diſtinct and peculiar genus. Of this Mr. Brown has made us acquainted with ſeven ſpecies. — Sm. Tr. of Linn. Soc. v. 4. 219. Brown Prodr. Nov. Holl. v. 1. 287. Ait. Hort. Kew. v. 2. 271.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Aſphodeli*, Juſſ. *Aſphodeleæ*, Brown.

Gen. Ch. *Cal.* none, unleſs the corolla be taken for ſuch. *Cor.* inferior, of one petal, in ſix deep, nearly equal, oblong, permanent ſegments; the three inner ones concave, converging at the baſe. *Stam.* Filaments ſix, inſerted into the lower part of the corolla, linear, flat, ſmooth, and naked, longer than the ſegments; anthers verſatile. *Piſt.* Germen ſuperior, ovate, with the rudiments of many ſeeds in each cell; ſtyle cylindrical, with three furrows; ſtigma ſimple. *Peric.* Capſule projecting beyond the cloſed permanent corolla, ovate, with three blunt angles, woody, almoſt horny, poliſhed, acute, of three cells, and three valves, the partitions from the middle of each valve. *Seeds* one or two in each cell, bordered, compreſſed, with a hard black ſhell; the ſcar at the baſe, naked; embryo tranſverſe; albumen ſoft and fleſhy.

Eſſ. Ch. Corolla inferior, in ſix deep ſegments, permanent. Filaments flat, linear, naked. Capſule triangular, poliſhed. Seeds one or two, compreſſed, bordered.

Mr. Brown, from whoſe examination, of the living plants, we have improved our generic deſcription above, remarks, that the ſpecies of this genus have a peculiar habit, ſo ſtriking, that where they abound, they give a ſingular character to the face of the country. The body of the *root* is ſometimes elevated into a thick, ſcarred, black *ſtem*, often divided or branched, and ſeveral feet in height, exuding a fragrant yellow reſin: in other inſtances it is very ſhort, ſcarcely riſing above the ſurface of the ground. *Leaves* very numerous, crowded, narrow, graſſy, of great length, linear, ſomewhat triangular, or two-edged, ſpreading every way; recurved at the extremity; dilated, and half-ſheathing, at the baſe; rigid and elaſtic when dry. *Flower-ſtalk* terminal, quite ſimple, round, often many feet in length, ſmooth, firm, hard, and durable. *Spike* terminal, ſolitary, cylindrical, denſe, many-flowered, reſembling a catkin, ſometimes equal in length to the ſtalk itſelf. *Flowers* ſeſſile, cloſely crowded, ſmall, white, each accompanied by numerous, imbricated *bracteas*, tapering at the baſe into a claw, the innermoſt gradually ſmalleſt. *Capſules* of a ſhining cheſnut, partly black.

"The ſtructure of the *ſeeds* agrees with *Borya*, Labill. Nov. Holl. t. 107. Brown Prodr. v. 1. 286; nor are theſe two genera very diſſimilar in foliage or infloreſcence. They are placed at the end of the *Aſphodeleæ*, becauſe of their fleſhy *albumens*, and the black cruſtaceous ſkin of their *ſeeds*." *Brown.*

1. X. *arborea.* Arboreous Yellow-gum. Br. n. 1.—"Stem arboreſcent. Leaves two-edged; triangular beyond the middle; ſtriated in front. Stalk ſcarcely the length of the very long ſpike. Bracteas and corolla beardleſs." — Native of the country near Port Jackſon, New South Wales. Each diviſion of the thick *ſtem* is crowned with a large tuft of innumerable long, ſlender, drooping *leaves*, in the centre of which the *flower-ſtalks* ſtand ſolitary. See n. 3.

2. X. *auſtralis.* Southern Yellow-gum. Br. n. 2.—"Stem arboreſcent. Leaves compreſſed longitudinally. Stalk ſhorter than the elongated ſpike. Bracteas ſubtending the tufts of flowers elongated."—Native of the iſland of Van Diemen, where it was gathered by Mr. Brown. We have ſeen no ſpecimen.

3. X. *Haſtile.* Spear Yellow-gum. Br. n. 3. Ait. n. 1. (Yellow reſin-tree; White's Voyage, 235. t. at p. 249.)—Stem very ſhort. Leaves compreſſed longitudinally. Stalk many times longer than the eighteen-inch ſpike. Bracteas, and outer ſegments of the corolla, downy at the point.—Native of New South Wales, from whence we received ſpecimens in 1790, by favour of Dr. John White. It is ſaid to have been ſent, in 1803, to Kew garden, by Philip Gidley King, eſq. A green-houſe plant, flowering in April and May. In the deſcription given by Dr. White, at the place above quoted, he evidently confounds this ſpecies and the *X. arborea;* for he ſays "it is about the ſize of an Engliſh Walnut-tree. The *trunk* grows pretty ſtraight for about fourteen or ſixteen feet, after which it branches out into long ſpiral *leaves*, which hang down on all ſides, and reſemble thoſe of the larger kinds of graſs, or ſedge. From the centre of the head of leaves ariſes a ſingle *footſtalk*, eighteen or twenty feet in height, perfectly ſtraight and erect, terminating in a *ſpike* of a ſpiral form. This large *ſtalk* is uſed by the natives for making ſpears and fiſh-gigs, being pointed with the teeth of fiſh, or other animals." The firſt part of this deſcription appears to belong to the *arborea;* the latter, regarding the *infloreſcence*, to the *Haſtile;* which might eaſily, perhaps, except by a ſcrutinizing botaniſt, be ſuppoſed different ſtages of growth, or varieties, of the ſame plant. Such a miſtake may be more eaſily accounted for than that of the great Linnæus, in combining nearly the whole genus of *Aloe* into one ſpecies. The Yellow Reſin is produced by the preſent, and ſome other, ſpecies of this genus, by ſpontaneous exudation from the trunk; promoted ſometimes, as we judge from the appearance of certain ſpecimens, by fires kindled by the ſavage natives of the country. The juice, fluid at firſt, ſoon hardens in the ſun, into a concrete brittle form, of a dull orange colour. Burnt on hot coals, it emits a fragrant ſmoke, ſmelling like a mixture of balſam of Tolu and Benzoin, approaching in ſome degree to Storax. This reſin is perfectly ſoluble in ſpirit of wine, but not in water, nor even in eſſential oil of turpentine, unleſs digeſted in a ſtrong heat. The varniſh which it makes with either is weak, and of little uſe. Dr. White found this Yellow Gum a good pectoral medicine, in many caſes. If burnt in a room, the ſcent, though pleaſant to ſome people, ſoon proves oppreſſive, and the ſmoke irritating to the lungs. Olive gum, uſed by the Italians, is preferable for fumigation.

4. X. *media.* Intermediate Yellow-gum. Br. n. 4.—"Stem rather ſhort. Leaves (longitudinally?) compreſſed. Stalk very long, many times exceeding the eighteen-inch ſpike. Bracteas and corolla beardleſs."—Obſerved by

Mr. Brown near Port Jackson. He is not quite confident of its being a distinct species from the last.

5. X. *minor*. Lesser Yellow-gum. Br. n. 5.—"Stem none. Leaves triangular; flat in front; rather concave beyond the middle. Stalk many times longer than the spike. Bracteas scarcely longer than the tufts of flowers, all, like the corolla, beardless."—Gathered by Mr. Brown, in New South Wales. The *spike* of this species measures from five to eight inches. *Brown*.

6. X. *bracteata*. Long-bracteated Yellow-gum. Br. n. 6.—"Stem none. Leaves triangular; below the middle somewhat elevated in front; beyond it rather concave. Stalk many times longer than the spike. Bracteas subtending the tufts twice or thrice the length of the flowers, lanceolate and divaricated, all, like the corolla, beardless."—From the same country. The *spike* is only from three to six inches in length. *Brown*.

7. X. *Pumilio*. Dwarf Yellow-gum. Br. n. 7.—"Stem none. Leaves below the middle flattish, with a slightly elevated ridge on both sides; beyond it triangular and channelled. Stalk many times longer than the ovate spike. Bracteas nearly equal, beardless as well as the corolla."—Gathered by Mr. Brown, in the tropical part of New Holland. The *flower-stalk* itself is, in this species, only a foot high. *Brown*.

XANTHOXYLUM, received its name from governor Cadwallader Colden, because of the yellow hue of the wood, to which ξανθος, *yellow*, and ξυλον, *wood*, alludes. We make no scruple to follow the example of professor Martyn, in restoring the proper orthography; nor is it requisite to burthen our readers with a perpetual indication of the original blunder, under every species, though that blunder has the sanction of Linnæus, and perhaps of all the authors, except Martyn, that we may have to quote. They generally write the word *Zanthoxylum*, or *Zanthoxylon*.—Linn. Gen. 519. Schreb. 684. Willd. Sp. Pl. v. 4. 753. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 382. Pursh 209. Swartz Ind. Occ. 570. Juss. 374. Lamarck Dict. v. 2. 38. Illustr. t. 811. Gærtn. t. 68. (Fagara; Duham. Arb. v. 1. 229. t. 97. Swartz Prodr. 33.)—Class and order, *Dioecia Pentandria*. Nat. Ord. "*Hederaceæ*," Linn. rather his *Dumosæ*. *Terebintaceis affine*, Juss.

Gen. Ch. corrected. Male, *Cal.* Perianth very small, in three or five deep, concave, rather acute segments. *Cor.* Petals three or five, oval, erect, concave, thrice the length of the calyx. *Stam.* Filaments three or five, awl-shaped, erect, longer than the petals; anthers roundish, two-lobed, furrowed.

Female, *Cal.* like the male, inferior, permanent. *Cor.* like the male, deciduous. *Pist.* Germens from two to five, roundish, each terminating in an awl-shaped style, longer than the petals; stigmas obtuse. *Peric.* Capsules from one to five, stalked, each of one cell, and two coriaceous valves, bursting at the inner margin. *Seeds* solitary, roundish, polished, pendulous from an upright bristle-shaped stalk.

Eff. Ch. Male, Calyx in three or five small deep segments. Petals three or five.

Female, Calyx like the male, inferior, permanent. Petals three or five. Capsules from one to five, of two valves, and one cell. Seeds solitary, pendulous.

Obs. This genus is distinguished from FAGARA, (see that article,) by having separated *flowers*, either three-cleft, or five-cleft, and pendulous *seeds*. Botanists appear to have mistaken its real character, taking the *corolla* for a *calyx*. To this error Linnæus and Duhamel led the way, and Jussieu, Willdenow, and others, have followed them. Yet Linnæus in his *Gen. Pl.* subjoins to his generic description a more correct statement, altogether superseding the former; and Willdenow admits species from Swartz, whose *petals* by their presence contradict his essential character. We have not seen living specimens of *Xanthoxylum*, but the descriptions of Browne and Swartz leave little doubt of the correctness of the above characters. We are much tempted to unite the two genera in question, but as they really have not been sufficiently investigated, and Gærtner seems to have discovered a distinctive mark of *Xanthoxylum*, in the stalked pendulous *seeds*, we leave them for future inquiry. The whole genus is shrubby or arboreous, with alternate, pinnate, sometimes only ternate, entire, or somewhat crenate *leaves*, and clustered, or panicled, *flowers*. The *stem* is, in most instances, armed with prickles, that are sometimes very formidable. The *wood* is hard, and serviceable for many purposes.

Sect. 1. *Stem without prickles*.

1. X. *ternatum*. Three-leaved Yellow-wood. Swartz Ind. Occ. 570. Willd. n. 1. (Fagara trifoliata; Swartz Prodr. 33.)—Prickles none. Leaves ternate, obovate, slightly emarginate, shining; dotted beneath.—Received by sir Joseph Banks from the island of Dominica. A *shrub*, six feet high, with roundish, subdivided *branches*, angular when young. *Leaves* on smooth, spreading, channelled *footstalks*. *Leaflets* on small partial stalks, entire, rigid, veiny; contracted at the base; paler beneath, and minutely dotted with black. *Clusters* axillary, compound. *Flowers* small, whitish. *Germens* three, contiguous, like one three-lobed germen. *Stigmas* three, sessile. *Capsules* three, each of two hemispherical valves, with two internal, membranous, whitish valves. *Seeds* solitary, roundish, polished. *Swartz*.

2. X. *emarginatum*. Emarginate Yellow-wood. Swartz Ind. Occ. 572. Willd. n. 2. Ait. n. 1. (Fagara emarginata; Swartz Prodr. 33. Lauro affinis, terebinthi folio alato, ligno odorato candido, flore albo; Sloane Jam. v. 2. 24. t. 168. f. 4.)—Prickles none. Leaves pinnate, ovate, emarginate, veiny. Flowers triandrous.—Native of mountains in the interior parts of Jamaica, where it is vulgarly called *Lignum rorum*, a corruption of *Lignum Rhodium*, the smell of every part of the shrub resembling the latter when rubbed, or held near the fire. The *stem* is woody, branched, round. *Leaflets* about three pair, rarely with an odd one, above an inch long, veiny, rather coriaceous, and shining. *Clusters* terminal, somewhat compound, erect. *Flowers* minute, whitish. *Calyx* in five deep, ovate, acute, permanent segments. *Petals* only three, ovate, concave, spreading, twice the size of the calyx. *Stamens* three, very short. *Germen* three-lobed, with three sessile *stigmas*. *Capsule* seldom more than one perfected, with two internal, as well as external, valves, and one orbicular, black, shining *seed*. *Swartz*.

3. X. *acuminatum*. Pointed-leaved Yellow-wood. Swartz Ind. Occ. 575. Willd. n. 3. (Fagara acuminata; Swartz Prodr. 33.)—Prickles none. Leaves pinnate, elliptical, pointed, coriaceous. Flowers triandrous.—Native of mountainous parts of Jamaica. A *shrub*, with round spreading *branches*. *Leaflets* three or four pair, laurel-like, shining. *Cymes* terminal, subdivided in a forked manner. *Flowers* crowded, small, white. *Calyx* of three minute ovate leaves. *Petals* three, obtuse, concave, one line and a half long. *Stamens* three, shorter than the *corolla*. *Fruit* globose, the size of a pepper-corn, only one *capsule*, out of three, coming to perfection.

Sect. 2. *Stem prickly*.

4. X. *punctatum*. Dotted Yellow-wood. Willd. n. 4.

"West

"Weſt St. Croix 236."—Stem prickly. Leaves ternate, or pinnate, oblong, finely crenate; dotted beneath.—Native of the iſland of Santa Cruz. *Willdenow*.

5. X. *ſpinoſum*. Prickly Triandrous Yellow-wood. Swartz Ind. Occ. 574. Willd. n. 5. (Fagara ſpinoſa; Swartz Prodr. 33.)—Stem prickly. Leaves pinnate, with many pair of ſeſſile, ovate, pointed leaflets; prickly beneath, as well as the branches. Flowers triandrous.—Native of dry mountainous ſituations in Jamaica. A *ſhrub*, about ſix feet high, with a round, branching, upright ſtem. *Spines* (rather we preſume *prickles*) ſcattered, prominent, needle-like, as long as the finger-nail; thoſe of the main ſtem ſtronger, and thicker at the baſe. *Leaves* a foot long, with a compreſſed *footſtalk*, round and prickly at its baſe, and, if we underſtand right, furniſhed with a pair of prickles before each pair of *leaflets*, which are nearly ſeſſile, eight or ten pair in all, ovate, with a ſhort emarginate point, veiny, rigid, ſmooth, and ſhining, very minutely crenate at the edges, their mid-rib occaſionally prickly. *Cymes* terminal, with minute, white, crowded *flowers*. *Calyx* with three ovate acute ſegments. *Petals* three, ovate, larger than the calyx. *Filaments* ſcarcely any. *Anthers* ovate, converging. *Germen* in three diſtinct lobes. *Stigmas* three, ſeſſile, obtuſe. *Fruit* not obſerved. *Swartz*.

We have been more full in our deſcriptions of Dr. Swartz's four ſpecies, that the reader may compare their characters with *Fagara*. Nothing is ſaid of their *flowers* being ſeparated, or dioecious.

6. X. *Clava Herculis*. Great Prickly Yellow-wood. Linn. Sp. Pl. 1455, excluding the ſynonym of Duhamel. Amœn. Acad. v. 3. 16. Willd. n. 6. Ait. n. 2. Swartz Obſ. 375. (X. ſpinoſum, lentiſci longioribus foliis, euonymi fructu capſulari; Cateſb. Carolin. v. 1. t. 26, according to Linnæus. X. aculeatum, fraxini ſinuoſis et punctatis foliis; Pluk. Phyt. t. 239. f. 4.)—Stem with broad angular prickles. Leaflets ovate, pointed, crenate; nearly equal at the baſe: common footſtalk prickly. Flowers terminal, panicled.—Native of woods in the Weſt Indies and Carolina, flowering in March and April. It is marked by Mr. Aiton as a green-houſe plant, cultivated ever ſince Miller's time, flowering in April and May. The *trunk* is woody, often, according to Swartz, 30 or 40 feet high, armed with very powerful *prickles*, which are thick at their baſe, angular and ſharp at the point. *Leaves* a foot long, pinnate, as in all the following ſpecies; their common *footſtalks* armed with ſcattered ſtraight prickles, one-third of an inch long: *leaflets* about ſeven pair, on ſhort partial ſtalks, unequally divided by their ſmooth mid-rib, and ſomewhat falcate, an inch and a half or two inches long, bordered with ſhallow unequal notches, ſmooth and rather ſhining. *Cluſters* terminal, compound. *Flowers* polygamous, there being ſome united ones, though not perfecting ſeed, on one tree, and others entirely female, on another. The *former* have a minute five-toothed *calyx*. *Petals* five, thrice as long, ovate, erect, or a little incurved. *Filaments* five, twice the length of the petals, and inſerted between them. *Anthers* oblong, cloven at the baſe. *Germen* roundiſh, abortive, with five awl-ſhaped erect *ſtyles*, and ſimple *ſtigmas*. The *female flowers* have a five-toothed *calyx*; five concave *petals*; no *ſtamens*. *Germens* five, united into a roundiſh body. *Styles* none. *Stigma* peltate, ſlightly convex, a little elevated, with five furrows. *Capſules* five, combined, or one of five lobes, each lobe having two valves, and containing a roundiſh, black, ſhining *ſeed*. Our deſcription of the fructification is taken from Dr. Swartz. The *leaves* bear but a ſlight reſemblance to the Maſtick-tree, or any other ſpecies of *Piſtacia*, being decidedly crenate.

7. X. *aromaticum*. Aromatic Yellow-wood. Willd. n. 7. (Euonymo adfinis aromatica, ſive Xanthoxylon ſpinoſum, fraxinellæ foliis cheuſanicum; Pluk. Amalth. 78. t. 393. f. 2.)—Stem with oppoſite prickles. Leaflets ovato-lanceolate, ſerrated; unequal at the baſe: common footſtalk prickly. Panicles terminal.—Native of Chuſan. "A *ſhrub* with ſtraight prickles. *Leaflets* two, three, or four pair, pointed, one inch and a half long, marked with pellucid dots; rounded near the baſe, at the upper edge; contracted at the lower. *Common footſtalk* beſet with ſtrong, nearly oppoſite, prickles." *Willdenow*, from a dried ſpecimen, without *flowers*. Plukenet ſays, "the fruit is a ſingle, round, rough, or warty *capſule*, taſting ſtrongly of camphor, lined with a white, ſmooth, inſipid membrane, containing a black poliſhed *ſeed*, with a hollow whitiſh ſcar, in which lies the thread connecting the ſeed with its capſule." This very accurate deſcription determines the genus. He adds, that the Chineſe uſe this fruit inſtead of pepper.

8. X. *rhoifolium*. Stomach-leaved Yellow-wood. Lamarck n. 2. Willd. n. 8. (Euonymo affinis aromatica, ſive Xanthoxylum ſpinoſiſſimum, fraxini anguſtiore folio punctatum; Pluk. Amalth. 76. t. 392. f. 1.)—Stem prickly. Leaflets lanceolate, finely ſerrated; nearly equal at the baſe: common footſtalk downy and prickly. Panicles axillary.—Brought from the iſlands of Chuſan, like the preceding. The *leaves* are a foot long. *Leaflets* nine to eleven pair, with an odd one, each three inches in length, pointed, dotted; ſlightly downy beneath. *Footſtalk* ſometimes without prickles. *Willdenow*. Plukenet's figure repreſents the *panicle* much like the preceding, but lateral. The *capſules* ſeem to be one, two, or three from each *flower*.

9. X. *juglandifolium*. Walnut-leaved Yellow-wood. Willd. n. 9. (X. americanum, ſive Herculis arbor aculeata major, juglandis foliis alternis parùm ſinuoſis; Pluk. Phyt. t. 239. f. 6?)—Stem prickly. Leaflets oblong, pointed, obſcurely ſerrated; unequal at the baſe: common footſtalk ſomewhat prickly. Panicles terminal.—Native of Hiſpaniola and Nevis. *Leaves* pinnate, with an odd one; *leaflets* alternate, coriaceous, two or three inches long, marked with diſtant, ſcarcely viſible, pellucid dots; their edges entire to the naked eye, but under a magnifier appearing furniſhed with cloſe diſtant ſerratures; contracted near the baſe, at the upper edge; rounded at the lower, rather downy beneath. *Common footſtalk* beſet with a few ſhort ſcattered prickles. *Panicles* terminal, much branched, denſe, downy. *Capſules* four or five, rather downy, pointed. *Seeds* black.

10. X. *rigidum*. Rigid Yellow-wood. Willd. n. 10.—"Stem prickly. Leaflets elliptical, entire, emarginate, pointed; their veins hairy beneath; mid-ribs and footſtalks prickly."—Native of South America. *Humboldt and Bonpland*. *Leaflets* four pair, coriaceous, on very ſhort ſtalks; the upper ones largeſt, two inches long; lower but half an inch; their baſe rather unequal; ſometimes having a ſhort, obtuſe, crenate point; their upper ſide poliſhed, reticulated with veins; under paler, with one long, reddiſh, awl-ſhaped prickle on the mid-rib of each, of which there are ſeveral on the common ſtalk. *Flowers* not ſeen. *Willdenow*.

11. X. *hermaphroditum*. Cayenne Yellow-wood. Willd. n. 11. (Fagara pentandra; Aubl. Guian. v. 1. 78. t. 30.)—Stem prickly. Leaflets elliptic-oblong, pointed, entire; nearly equal at the baſe: common footſtalk without prickles. Panicles terminal, repeatedly compound. Flowers united.

united.—Gathered by Aublet, in the forests of Cayenne, flowering in May, and bearing fruit in August. A *tree*, whose *trunk* is 40 or 50 feet high, and two feet and a half in diameter, with a prickly bark. The *wood* is white, hard, and compact. *Leaflets* about five pair, nearly sessile, smooth; the largest six inches long, and an inch and a half broad. *Panicles* large and much branched, composed of numerous, small, white *flowers*, having *stamens* and *pistils* in the same individual. *Capsules* three, four, or five from each flower, reddish, each containing a black, shining, oily *seed*. These *capsules* have a pungent aromatic flavour, and the Creoles call them negro's pepper.

12. X. *fraxineum*. Ash-leaved Yellow-wood, or Common Tooth-ache Tree. Willd. n. 12. Arb. 413. Ait. n. 2. Pursh n. 1. (X. Clava Herculis β; Linn. Sp. Pl. 1455. X. ramiflorum; Michaux Boreal.-Amer. v. 2. 235. Fagara fraxini folio; Duham. Arb. v. 1. 229. t. 97.)—Stem prickly. Leaflets ovate, very minutely serrated; equal at the base. Umbels axillary.—Native of shady woods, near rivers, from Canada to Virginia and Kentucky, flowering in April and May. A tincture of the bark and capsules is recommended in rheumatism and the tooth-ache, whence its English name. *Pursh*. A large deciduous shrub, whose *branches* are armed with sharp, conical, compressed, brown prickles, very broad at the base. *Leaflets* four or five pair, with an odd one, an inch and a half long, on short partial stalks; contracted at each end; more or less distinctly crenate, or bluntly serrated; smooth above; soft and downy beneath. Their common *footstalk* is described without prickles; but in our specimens it is always furnished with some, and occasionally with very numerous ones. The *flowers* are small, yellowish-green, in little dense *umbels*, just above the scars of last year's footstalks, accompanied by a tuft of downy young leaves. The mode of inflorescence abundantly distinguishes this species from all the rest. It is hardy in our gardens, flowering in March and April, before the leaves appear. The bark is used in America, as a powerful sudorific and diuretic, whence its use, as above-mentioned, in rheumatic disorders. This is the species most popularly taken for *X. Clava Herculis*, as appears by the herbarium of Jacquin, purchased formerly by sir Joseph Banks, and even by that of Linnæus. The two species, nevertheless, are widely different.

13. X. *tricarpum*. Three-grained Yellow-wood. Michaux Boreal.-Amer. v. 2. 235. Pursh n. 2. Ait. n. 4.—Stem prickly. Leaflets stalked, oblong-oval, pointed, very smooth, finely serrated; oblique at the base: common footstalk prickly. Capsules three, sessile.—In the woods of Carolina and Florida, flowering in July. *Michaux*, *Pursh*. Introduced into the English gardens in 1806, by Mr. John Lyon. A hardy shrub. *Aiton*.

14. X. *heterophyllum*. Various-leaved Yellow-wood. (Macqueria Commersoni; Juss. 374, under Xanthoxylum.)—Young branches prickly; their leaves with very numerous serrated leaflets, on prickly common stalks: old ones unarmed, their leaves of seven entire leaflets, on unarmed common stalks. Panicles axillary. Capsules solitary.—Gathered in the isle of Bourbon, by Commerson, some of whose specimens are in our possession. Nothing can be more paradoxical than the appearance of this shrub. We must rely on its discoverer for the accuracy of his specimens, as the two branches, so very different in appearance, are not connected together; though we cannot doubt their generical identity. The young *branch* is slender, covered with innumerable, sharp, ascending prickles, of various sizes, a line long at most. *Leaves* alternate: *common footstalk* of each five or six inches long, round, straight, channelled, beset with numerous prickles, like those of the branch, but smaller: *leaflets* from 40 to 60, or more, opposite or alternate, ovate, bluntish, smooth, crenate or bluntly serrated, one quarter or one-third of an inch in length, of a fine green, paler beneath, marked with pellucid dots; their mid-ribs bearing one or two prickles at the back. The older or flowering *branches* are stout, rugged, unarmed, leafy at their extremities only. *Leaves* alternate, rather crowded, altogether destitute of prickles, each consisting of three pair of obovate, bluntly pointed, entire, coriaceous, veiny, smooth *leaflets*, with an odd one; the lowermost smallest: *common footstalk* channelled, smooth. *Panicles* compound, rather shorter than the leaves; their stalks unarmed, compressed, and angular. *Capsules* only one, perfected in each flower, brown, the size of a pepper-corn, rugged, full of pellucid dots lodging a pungent aromatic camphorated oil, and very bitter. *Seed* black, polished, with a bivalve elastic *tunic*, or lining of the capsule.

For *X. trifoliatum*, Linn., see PANAX *Aculeatum*.

XANTHURUS INDICUS, in *Ichthyology*, the name of a fish called by the Dutch *geel-staardt*.

It is of the size and shape of the bream; its jaws are armed with straight and very sharp teeth, which stand almost straight out; its back is yellow, and its tail very strongly tinged with that colour; its belly is of a blueish-white; its head brown, and its fins of a fine red. It is caught with hooks among the rocks on the shores of the East Indies, and is a very wholesome and well-tasted fish. Ray.

XANTHUS, in the *Natural History of the Ancients*, the name of an iron-ore of the hæmatites or blood-stone kind, and usually accounted a species of it, and called by others *Elatites*.

It was of a pale yellowish-white, or the colour of the French pale yellow ochre, used by our painters; but like all other ferruginous bodies it became red by burning.

Theophrastus gives us expressly the etymology of the name, observing that it was called so from its colour; the Dorians calling a yellowish-white ξανθος, *xanthus*.

XANTHUS, in *Ancient Geography*, a famous river of Asia Minor, in the Troade. According to Pliny, it had its source in mount Ida, and discharged itself at the port of the Achæans into the Hellespont, after having joined the Simois.—Also, a river of Asia Minor, in Lycia, which had its source in mount Taurus, and watered the towns of Xanthus and Patara, and ran into the Mediterranean, near the last of these places. This river was anciently called Sirbes, according to Strabo, and he says that the temple of Latona was situated ten stadia above its mouth, and sixty stadia farther was the town of Xanthus.

XANTHUS, or *Xanthopolis*, a town of Asia Minor, and the largest in Lycia. It was situated seventy stadia from the mouth of the river on its bank. Pliny reckons fifteen miles from this town to the mouth of the river. Under Appian, the inhabitants of Xanthus were such enthusiasts for liberty, that when it was taken by Brutus they burnt it, and preferred death to submission to the conqueror. He adds, that the same circumstance occurred with regard to Harpalus, general of Cyrus the Great, and Alexander the Great. It subsisted in the time of Strabo.—Also, a town of the isle of Lesbos.

XANTIPPE, in *Biography*. See SOCRATES.

XANTON, in *Geography*, a town of France, in the department of the Vendée; 5 miles E. of Fontenay-le-Comte.

XANXUS, in *Natural Hiſtory*, a name given by ſome authors to a large ſpecies of ſea-ſhell, ſomewhat like that with which the Tritons of old were painted. It is found in great abundance near Ceylon, and is uſed there in medicine as an alkali and abſorbent in the ſame caſes in which we give the teſtaceous powders.

XAPARACO, in *Geography*, a town of Mexico, in the province of Mechoacan; 85 miles W.N.W. of Mechoacan.

XARAMA, a river of Spain, which runs into the Tagus, a little below Aranjuez.

XARAYES, or ZARAYOS, *Laguna de Los*, a ſuppoſed lake of Braſil, formed by the river Paraguay; about 108 miles in length, and 21 in breadth. This is merely an inundation of the river, and exploded as a lake. S. lat. 17° 45′.

XATHOS, in *Ichthyology*, a name given by Appian to the fiſh called by the generality of authors the *erythrinus*, or *rubellio*.

XATIVA, now ST. FELIPE, in *Geography*. See ST. *Felipe*.

XAVIER, a town of Spain, in Navarre, the native place of the celebrated miſſionary of that name; 3 miles E. of Sangueſa.

XAVIER. See SABI.

XAVIER *Gogo*, a town of Africa, in the country of Whidah; 12 miles N.N.E. of Sabi.

XAVIER, *Saint*. See SAINT *Xavier*.

XAVIER *Zante*, a town of Africa, in the country of Whidah; 14 miles N.W. of Sabi.

XAUXA, a town of Peru, in the biſhopric of Guamanga, containing two churches; 90 miles E. of Lima. S. lat. 12°. W. long. 75° 30′. See JAUJA.

XAUXA, a river of South America, which riſes in the Andes, about 75 miles N. from Atun Xauxa, and uniting with the Apurimac, forms the Ucayale.

XAUXAVA, a town of Morocco, on a river, and at the foot of a mountain, both of the ſame name; 15 miles N. of Morocco.

XEBEC, in *Sea Language*, a ſmall three-maſted veſſel, navigated in the Mediterranean ſea, and on the coaſts of Spain, Portugal, and Barbary. The fore and main maſts are called block-maſts, being ſhort, and formed ſquare at the head, to receive ſheaves, to reeve the jeers, &c. The mizen-maſt is fitted with a top-maſt, &c. ſimilar to a ſmall Engliſh ſhip, and which has been lately added, to keep them better to the wind. The xebecs have no bowſprit, but a ſort of boomkin, woulded and confined to the prow, nearly horizontal (ſee GALLEY), to the outer end of which lead the bow-lines. The fore-maſt rakes much forward, has no ſtay, and the ſhrouds ſet up, ſimilar to the runners in Engliſh cutters or ſloops, to toggles fixed in the ſides. Theſe ſhrouds are eaſily ſhifted when the veſſels go about. The main-maſt is nearly upright, and rigs as the fore-maſt. Each maſt carries a latteen-ſail, the largeſt ſide of which is bent to a yard that hoiſts by a purrel round the maſt, at about one-third its length; the yards are worked at the lower end by bow-lines, and the ſail extended by a ſheet at the clue. The upper lee-yard-arm is worked by a brace, and the ſtrain ſupported by vargs nearer the maſt. The mizen-maſt carries a latteen-ſail, ſimilar to the main and fore maſt. Veſſels with latteen-ſails will lie one point nearer the wind than a ſquare-rigged veſſel. Xebecs, particularly in France, have been rigged ſimilar to polacres; but they never ſail ſo well as they did in their primitive ſituation.

The xebec, generally equipped as a corſair, is conſtructed with a narrow floor, to be more ſwift in purſuit of the enemy; and of a great breadth, to enable her to carry a great force of ſail for this purpoſe, without danger of overturning. As theſe veſſels are uſually very low built, their decks are formed with a great convexity from the middle of their breadth toward the ſides, in order to carry off the water, which falls aboard, more readily by their ſcuppers. But as this extreme convexity would render it difficult to walk thereon at ſea, particularly when the veſſel rocks by the agitation of the waves, there is a platform of grating along the deck from the ſides of the veſſel toward the middle, on which the crew may walk dry-footed, whilſt the water is conveyed through the grating to the ſcuppers.

When a xebec is equipped for war, ſhe is occaſionally navigated in three different methods, according to the force or direction of the wind. Thus, when the wind is fair, and nearly aſtern, it is uſual to extend ſquare ſails upon the main-maſt, and frequently upon the fore-maſt; and as thoſe ſails are rarely uſed in a ſcant wind, they are of an extraordinary breadth. When the wind is unfavourable to the courſe, and yet continues moderate, the ſquare yard and ſails are removed from the maſts, and laid by, in order to make way for the large latteen yards and ſails, which ſoon after aſſume their place; but if the foul wind increaſes to a ſtorm, theſe latter are alſo lowered down and diſplaced, and ſmall latteen yards, with proportional ſails, are extended on all the maſts. The xebecs, which are generally armed as veſſels of war by the Algerines, mount from ſixteen to twenty-four cannon, and carry from three hundred to four hundred and fifty men, two-thirds of whom are generally ſoldiers. Falconer.

XEBEROS, in *Geography*, a town of South America, in the audience of Quito; 40 miles S.W. of La Laguna.

XEJUI, a river of Paraguay, which runs into the Paraguay.

XEKIAS, in *Biography*, a name given by the Chineſe and Japaneſe to an Eaſtern philoſopher of mythological origin and character, called alſo Buddas among the Indians, Somonacodom in Siam, and after his death Föe or Fotoki, who faſcinated the whole northern and eaſtern region of Aſia, as well as part of the ſouthern, with his pantheiſtic doctrine. It is probable, as ſome have ſaid, that he lived about 600 years before Chriſt; and having firſt appeared in the ſouthern part of India, on the borders of the Indian ocean, diſſeminated his philoſophy by means of his diſciples to all India. It is ſaid that he ſpent twelve years in ſolitude, when he was inſtructed by the Tolopoin, called by the ancients "hylobii," *i. e.* ſylvan hermits; and that in his 30th year he devoted himſelf to contemplation, and attained to the intuitive knowledge of the firſt principles of all things, from which he took the name of Föe, which ſignifies, "ſomething more than human." His myſtical philoſophy was delivered to his innumerable diſciples under the veil of allegory. The Japaneſe add, that in his contemplations, during which his body remained unmoved, and his ſenſes unaffected by any external object, he received divine revelations, which he communicated to his diſciples.

Buddas, or Xekias, in his eſoteric doctrine, taught the difference between good and evil; the immortality of the ſouls of men and brutes; different degrees of rewards and puniſhments in a future world; and the final advancement of the wicked, after various migrations, to the habitations of the bleſſed. Amidas, who, according to the Chineſe, is Xekias himſelf, preſides in theſe habitations, and is the mediator, through whoſe interceſſion bad men obtain a mitigation of their puniſhment. Theſe dogmas are contained in an ancient book, called Kio, which all the Indians beyond the Ganges, who follow the doctrine of Xekias,

 receive

receive as ſacred, and which is illuſtrated by innumerable commentaries.

The doctrine which Xekias delivered towards the cloſe of his life to his eſoteric diſciples was very different. Vacuum, or void, was, according to his inſtruction, the principle and end of all things, ſimple, infinite, eternal, but deſtitute of power, intelligence, or any other ſimilar attribute; and that to be like this principle, by extinguiſhing all paſſion and affection, and remaining abſorbed in the moſt profound contemplation, without any exerciſe of the reaſoning faculty, is the perfection of happineſs. The firſt principle in this ſyſtem cannot be pure nihility, which admits of no properties; probably, it is Firſt Matter, without variable qualities, whence all things are ſuppoſed to ariſe, which is not to be perceived by the ſenſes, but contemplated as the latent divinity, infinitely diſtant from the nature of viſible things, yet the origin of all ſubſtances. The emanations from this fountain became, in the popular theology, objects of the groſſeſt ſuperſtition and idolatry.

The doctrine of Föe, or Xekias, was embraced by innumerable diſciples. Among theſe, one of his moſt eminent ſucceſſors was Tamo, a Chineſe, who was ſo entirely devoted to contemplative enthuſiaſm, that he ſpent nine whole years in profound meditation, and was on this account deified.

According to the Bramins, Xekias had neither father nor mother; and as no Indian city claims the honour of his birth, he was probably a foreigner, who migrated to the ſouthern part of India from ſome neighbouring maritime country, perhaps from Lybia; whither he came with ſome Egyptian colony, and who had been inſtructed in the Egyptian myſteries. It is not improbable, that at the time when Cambyſes conquered Egypt, and diſperſed almoſt the whole nation, this impoſtor might have paſſed over into India, and propagating his doctrine among an ignorant and ſuperſtitious people, became an object of univerſal veneration. Brucker's Philoſ. by Enfield, vol. ii. Appendix. See Boodh, Brachmans, China, Japan, &c.

XEL, in the *Materia Medica of the Ancients*, a name given to the fruit *ſel*.

XELSA, in *Geography*, a town of Spain, anciently a Roman colony, called Julia Celſa.

XELVA. See Chelva.

XENDAY, a town of Japan, in the iſland of Niphon; 115 miles N.N.E. of Jedo. N. lat. 39°. E. long. 141° 52′.

XENEXTON, a word uſed by Paracelſus, to expreſs a ſort of amulet to be worn about the neck, to preſerve people from infection in the plague.

XENIA, Ξενια, q. d. *gifts*, in ſome *Ancient Cuſtoms*, were gifts, or preſents, made to the governors of provinces, by the inhabitants thereof.

The word occurs pretty frequently in charters of privileges; where *quietos eſſe à xeniis* denotes an exemption from making ſuch preſents to kings and queens, upon their travelling through ſuch precincts.

Xenia, in *Geography*, a townſhip of Ohio, in the county of Greene, with 1429 inhabitants.

XENIL, a river of Spain, which riſes in Grenada, and runs into the Guadalquivir, about three miles below Ecija.

XENINEPHIDEI, a word uſed to expreſs a ſort of imaginary ſpirits, mentioned by the adepts, as delighting to diſcover the occult qualities of bodies to men.

XENISMI, Ξενισμοι, in *Antiquity*, ſacrifices offered at the Athenian feſtival Anaceia.

XENOCRATES, in *Biography*, a famous Grecian philoſopher, was born at Chalcedon, in the firſt year of the 96th Olympiad (B.C. 396), and attached himſelf at firſt to Æſchines, but afterwards became a follower of Plato, and ſucceeded Speuſippus in the chair of the old academy (B.C. 339). His temper was gloomy, his aſpect ſevere, and his manners were little tinctured with urbanity. Plato took pains to correct theſe obliquities of his diſpoſition and character; and as he highly reſpected his maſter, he probably improved by his inſtruction, ſo that he was reckoned as one of his moſt eſteemed diſciples. Xenocrates was held in ſuch eſtimation among the Athenians for his virtues, and eſpecially his integrity, as well as his wiſdom, that in a public trial his ſimple aſſeveration was accepted inſtead of an oath, which was uſually required; and that even Philip of Macedon found it impoſſible to corrupt him. Dreading his influence, and the temptation of a bribe, he declined all private intercourſe with the Macedonian ſovereign, and was honoured by him with this teſtimony; that of all perſons who had come to him on embaſſies from foreign ſtates, Xenocrates was the only one whoſe friendſhip he was not able to purchaſe. On occaſion of being employed as an ambaſſador to the court of Antipater, for the redemption of ſeveral Athenian captives, he waved the honour of accepting the invitation of this prince to ſit down with him at ſupper, in the words of Ulyſſes to Circe, cited from Homer's Odyſſ. (l. x. v. 383); thus tranſlated,—

> "What man, whoſe boſom burns with gen'rous worth,
> His friends enthrall'd, and baniſh'd from his ſight,
> Would taſte a ſelfiſh, ſolitary joy?"

The patriotic ſpirit expreſſed in this appropriate paſſage gratified Antipater ſo much, that he immediately releaſed the priſoners. As another example of his moderation, it is alleged, that when Alexander, wiſhing to mortify Ariſtotle, on account of ſome accidental pique, ſent Xenocrates a magnificent preſent of 50 talents; he accepted only 30 minæ, returning the reſidue to the donor with this meſſage; that the whole ſum was more than he ſhould have been able to ſpend during his whole life. In this inſtance, he alſo manifeſted a ſuperiority to that kind of jealouſy and revenge which might have actuated meaner minds, when it is conſidered that Ariſtotle had inſtituted a ſchool in the Lyceum, in oppoſition to the academy over which Xenocrates preſided. In the uſe of food he was ſingularly abſtemious; his chaſtity was invincible by the ſeducing arts of Phryne, a celebrated Athenian courteſan; and his humanity was teſtified by the ſhelter which he afforded to a ſparrow that was purſued by a hawk, and fled into his boſom, where he allowed it to remain till its enemy was out of ſight, alleging that he would never betray a ſuppliant. In the employment of his time, he allotted a certain portion of each day to its proper buſineſs, one of which he devoted to ſilent meditation. His high ſenſe of the importance and utility of mathematical ſtudies was ſufficiently evinced by his refuſing to admit into his academy a young man who was ignorant of geometry and aſtronomy, becauſe he was deſtitute of the handles of philoſophy. Upon the whole, Xenocrates was eminent, both for his purity of morals, and his acquaintance with ſcience; and he ſupported the reputation of the Platonic ſchool by his lectures, his writings, and his conduct. His life was prolonged to the third year of the 116th Olympiad (B.C. 314), or the 82d year of his age, when he accidentally fell in the dark into a reſervoir of water.

His philoſophic tenets were Platonic; but in his lectures he adopted the language of the Pythagoreans. In his ſyſtem, unity and diverſity were principles in nature, or gods; the former being the father, and the latter the mother of the univerſe.

universe. The heavens he represented as divine, and the stars as celestial gods; and besides these divinities, he taught that there are terrestrial demons, of a middle order between the gods and men, partaking of the nature both of mind and body, and, like human beings, capable of passions, and liable to diversity of character. He probably conceived with Plato, that the superior divinities were ideas, or intelligible forms, proceeding immediately from the Supreme Deity, and the inferior gods, or demons, to be derived from the soul of the world, and, like that principle, compounded of a simple and a divisible substance, or of that which always remains the same, and that which is liable to change. Diogen. Laert. Plut. de Virt. Mor. De If. et Ofir. De Anim. Gent. Cicero de Nat. Deor. Brucker's Hist. Phil. by Enfield, vol. i.

XENODOCHUS, formed of ξενος, *stranger*, and δεχομαι, *I receive*, an ecclesiastical officer of the Greek church, the same with the hospitaler, or a person who takes care of the reception and entertainment of strangers.

St. Isidore, a priest and solitary, surnamed *Xenodochus*, lived in the fourth century. He was thus called, because entrusted with that office in the church of Alexandria.

XENOPAROCHUS, formed of ξενος, *stranger*, and παροχος, of παρεχω, *I furnish*, among the *Romans*, an officer who provided ambassadors with all kinds of necessaries, at the public expence.

XENOPHANES, in *Biography*, the founder of the Eleatic sect, was born at Colophon, about the 56th Olympiad (B.C. 556); and having left his country, took refuge in Sicily, where he gained a subsistence by reciting, in the court of Hiero, elegiac and iambic verses, which he had written against the theogonies of Hesiod and Homer. From Sicily he removed to Magna Græcia, where he became a celebrated preceptor in the Pythagorean school, without adhering strictly to the doctrines of Epimenides, Thales, and Pythagoras. His life was prolonged to the advanced age of 100 years, that is, till the 81st Olympiad (B.C. 456), during 70 years of which he occupied the Pythagorean chair of philosophy. In Enfield's Philosophy of Brucker we have the following summary of the doctrine of Xenophanes:— In metaphysics, he taught, that if ever there had been a time when nothing existed, nothing could ever have existed. That whatever is, always has been from eternity, without deriving its existence from any prior principle; that nature is one and without limit; that what is one is similar in all its parts, else it would be many; that the one infinite, eternal, and homogeneous universe, is immutable and incapable of change; that God is one incorporeal eternal being, and, like the universe, spherical in form; that he is of the same nature with the universe, comprehending all things within himself; is intelligent, and pervades all things; but bears no resemblance to human nature either in body or mind.

In physics, he taught, that there are innumerable worlds; that there is in nature no real production, decay, or change; that there are four elements, and that the earth is the basis of all things; that the stars arise from vapours, which are extinguished by day, and ignited by night; that the sun consists of fiery particles collected by humid exhalations, and daily renewed; that the course of the sun is rectilinear, and only appears curvilinear from its great distance; that there are as many suns as there are different climates of the earth; that the moon is an inhabited world; that the earth, as appears from marine shells, which are found at the tops of mountains, and in caverns far from the sea, was once a general mass of waters; and that it will at length return into the same state, and pass through an endless series of similar revolutions.

The doctrine of Xenophanes concerning nature is so obscurely expressed by those who have transmitted an imperfect account of it, that it has been misunderstood and misrepresented. Some have confounded it with the atheistical system of Spinoza; by others it has been accommodated to the ancient doctrine of emanation; and others have maintained its similarity to the Pythagorean and Stoical notions of the soul of the world. The truth seems to have been, according to Brucker's statement, that he held the universe to be one in nature and substance; distinguishing in his conception between the matter of which all things consist, and that latent divine force, which he considered not as a distinct substance, but an attribute, and yet necessarily inherent in the universe, and the cause of all its perfection. This view of his notion is consistent with the language he used, and with the account of his doctrine, preserved by Sextus Empiricus, that God is of the same nature with the universe; τὸν Θεὸν συμφυῆ τοῖς πᾶσι. When he asserted that there is no motion in nature, it is probable that he understood the term motion metaphysically, meaning merely that there is no such thing in nature as passing from nonentity to entity, or the reverse. Accordingly, the ancients more generally applied the term motion to a change of nature than to change of place. Brucker is of opinion that the notion ascribed to Xenophanes concerning the nature and origin of the celestial bodies, as meteors daily renewed, must have been founded on a misconception and misrepresentation of his opinion on the subject. See ELEATIC *Philosophy*.

XENOPHILES, an able Greek musician, who professed the philosophy of Pythagoras, and who lived at Athens, where he arrived at the great age of 105. It is Lucian who gives this account of his extraordinary longevity from Aristoxenus.

XENOPHON, the son of Gryllus, an Athenian, was distinguished as a philosopher, commander, and historian. His engaging appearance whilst he was a youth induced Socrates to admit him into the number of his disciples. Under his tuition he made rapid progress in that kind of wisdom for which his master was so eminent, and which qualified him for all the offices of public and private life. Having accompanied Socrates in the Peloponnesian war, and manifested his valour in defence of his country, he afterwards entered into the army of Cyrus as a volunteer; but his enterprise against his brother proving unfortunate, Xenophon, after the death of Cyrus, advised his fellow-soldiers to attempt a retreat into their own country rather than to surrender themselves to the victor. His advice was regarded, and he was chosen as their commander. In the exercise of this duty he acquired by his prudence and firmness a high degree of honour; and the memorable adventure is related by himself in his "Retreat of the Ten Thousand." Having joined Agesilaus, king of Sparta, after his return into Greece, and fought with him against the Thebans in the celebrated battle of Chæronea, he displeased the Athenians by this alliance; and he was publicly accused for his former engagement in the service of Cyrus, and condemned to exile. Thus ignominiously treated, the Spartans took him under their protection, and provided for him a comfortable retreat at Scilluns, in Elis. In this asylum he enjoyed the pleasures of domestic life with his wife and two children for several years, and availed himself of the leisure that was thus afforded him by writing those historical works which have rendered his name immortal. On occasion of a war between the Spartans and Eleans, he was obliged to abandon this agreeable retreat, and to join his son, who was settled at Lepreus. From hence he afterwards removed with his whole family to Corinth, where, in the second year of the

105th Olympiad (B.C. 359), his life terminated, at the age of about 90. As a philosopher, he was an ornament to the Socratic school by his integrity, piety, and moderation; and in his whole military conduct, he was distinguished by an admirable union of wisdom and valour. As a writer, he has presented to succeeding ages a model of purity, simplicity, and harmony of language, expressing sentiments truly Socratic. By his wife Phitesia he had two sons, Gryllus and Diodorus; the former of whom ended his life with military glory in the battle of Mantinea. The news of his son's death was communicated to him whilst he was offering sacrifice; and upon receiving it, he took the crown from his head, uttering with a sigh these memorable words, "I knew that my son was mortal:" but when he heard that he had fought bravely, and died with honour, he again put on the crown, and finished the sacrifice. As an historian, he may be considered in his "Hellenics" as the continuator of Thucydides, and as having brought down the affairs of Greece to the battle of Mantinea. His "Cyropædia," or "Institution of Cyrus," is generally regarded as a work of fiction rather than of real history, exhibiting, under the name of the elder Cyrus, the picture of a perfect prince, according to his own conception of the character. His "Anabasis" (or Ascent) is an account of that memorable expedition of the younger Cyrus, in which he himself appears so conspicuous. This work appeared under the name of Themistogenes of Syracuse, to whom Xenophon himself ascribes it; nevertheless it has been universally ascribed to Xenophon: but if this be the case, it must have been written from memory, long after the events, which are differently related by Diodorus. Among his political works we may enumerate his accounts of "The Republic and Laws of Sparta;" "Of the Republic of Athens and its Revenues;" his "Praise of Agesilaus;" and his "Hiero, or Dialogue on Tyranny." Of a miscellaneous class, he wrote a treatise on "Oeconomics;" "On Hunting;" and "On the Office of Master of the Horse." The character of Xenophon, pourtrayed in his writings, seems to have exemplified virtue and humanity, kind and generous feelings, and a considerable degree of piety blended with superstition. In his Anabasis he exhibits a singular degree of credulity and regard to celestial warnings, which, in his view of them, governed his conduct, and were miraculously verified by the event. For his preference of the Spartan to the Athenian government and manners, derogating from his patriotism, the only apology is his banishment. His style has been always admired for its purity, simplicity, and clearness; and his works are reckoned amongst the most popular of the Greek classics, and have passed, collectively and separately, through several editions. Laertius. Ælian. Hist. Var. Fabr. Bib. Græc. vol. ii. Brucker's Philos. by Enfield, vol. i.

XENOXUA, in *Geography*, a town of European Turkey, in Macedonia; 36 miles S.E. of Akrida.

XEQUETEPEQUE, a town of Peru, in the government of Truxillo, on the Pasca Mayo; 55 miles N. of Truxillo.

XERANTHEMUM, in *Botany*, from ξηρος, *dry*, and ανθος, *a flower*, a name well adapted to express the dry and durable nature of the flowers of the present genus, one of the tribe popularly denominated Everlasting Flowers.—Linn. Gen. 420. Schreb. 551, excluding *Xeranthemoides* of Dillenius. Willd. Sp. Pl. v. 3. 1901. Mart. Mill. Dict. v. 4, the first section only. Sm. Prodr. Fl. Græc. Sibth. v. 2. 172. Ait. Hort. Kew. v. 5. 20. Tourn. t. 284. Juss. 179, excluding *Eliehrysum* of Tournefort. Lamarck Illustr. t. 692. f. 1. Gærtn. t. 165.—Class and order, *Syngenesia Polygamia-superflua*. Nat. Ord. *Compositæ nucamentaceæ*, Linn. *Corymbiferæ*, Juss.

Gen. Ch. *Common Calyx* imbricated; scales numerous, elliptic-lanceolate, scariose, permanent, the inner ones much longer than the disk, coloured, forming a radiant crown to the whole compound flower. *Cor.* compound, somewhat unequal; florets of the disk very numerous, all perfect, tubular, funnel-shaped, much shorter than the calyx, in five equal spreading segments; those of the circumference fewer, female, tubular, somewhat two-lipped, with five unequal segments. *Stam.* (in the perfect florets) Filaments five, capillary, very short; anthers forming a cylinder rather longer than the corolla. *Pist.* (in the same florets) Germen short; style thread-shaped, longer than the stamens; stigma cloven: in the female florets, *Stam.* none. *Pist.* Germen and style as in the perfect florets; stigma simple, club-shaped. *Peric.* none, except the calyx scarcely at all altered, except being closed. *Seed* in both kinds of florets alike, oblong; down a row of taper-pointed narrow scales. *Recept.* flattish, clothed with linear acute scales, rather longer than the florets.

Eff. Ch. Receptacle scaly. Down of taper-pointed scales. Calyx imbricated, its inner scales forming a coloured spreading radius.

Obs. Gærtner has long ago observed, what indeed no one could overlook, that the essential character of this genus, as given by Linnæus, answers to his first species only, *X. annuum*. This stands in the *Syst. Veg.* making a section by itself, characterized by a chaffy receptacle; whereas the other sections, "with a naked receptacle," receive all the numerous species besides, and directly contradict the generic character, "*receptaculum paleaceum.*" Gærtner, Jussieu, and Willdenow, have properly corrected this oversight, as we have shewn under ELICHRYSUM. The true *Xeranthemum*, therefore, would be left with a solitary species, sufficiently well marked indeed to be so distinguished, as far as the Linnæan species go. But our great master is proved to have confounded several together, under his *X. annuum*. Willdenow distinguishes three species, two of which we cannot separate, but we shall subjoin a fourth. They were all known to Tournefort, who indeed divides them still further, mistaking double or white flowered varieties as species. The *root* of the whole genus is annual. *Herb* erect, rigid, alternately branched, clothed with fine, white, close, cottony down, easily rubbed off. *Leaves* alternate, sessile, lanceolate, acute, undivided, entire; tapering at the base. *Flowers* solitary, on long, terminal, slightly scaly, stalks. Outer scales of the *calyx* roundish, membranous and shining, at least at the edges; inner oblong, spreading while in flower, purple or brownish, occasionally white, very brilliant and ornamental.

1. X. *annuum*. Purple Xeranthemum, or Everlasting Flower. Linn. Sp. Pl. 1201. Willd. n. 1. Ait. n. 1. Prodr. Fl. Græc. n. 2045. Jacq. Austr. t. 388. Mill. Illustr. t. 67. Mill. Ic. t. 279. (X. flore simplici, purpureo, majore; Tourn. Inst. 499, with perhaps the five following of that author. X. incanum non fœtens, flore majore; Moris. sect. 6. t. 12. f. 2. Ptarmica austriaca; Clus. Hist. v. 2. 11. Ger. Em. 607. πταρμικη of Dioscorides, according to Dr. Sibthorp.)

β. Linn. Sp. Pl. 1201. (X. inapertum; Willd. n. 2. Ait. n. 2; excluding the synonym of Morison. X. capitulis inapertis; Hall. Enum. 709. t. 23. X. n. 122; Hall. Hist. v. 1. 52. Ptarmica Imperati; Ger. Em. 606, no figure. Jacea oleæ folio, minore flore; Bauh. Pin. 272.)

Outer calyx-scales roundish-elliptical, awned, smooth at the

the keel; inner lanceolate, spreading. Crown of the seed lanceolate, shorter than the calyx.—Native of dry hilly ground in Austria, Hungary, France, Italy, and Greece; β is found in Switzerland, Spain, and Germany. This species is a hardy annual, common in our gardens, ever since the time of Gerarde and Lobel, flowering in July and August. The first variety, and especially the semidouble kind, figured by Philip Miller in his *Icones*, is preferred for cultivation. The flowers with their stalks, dried quickly, preserve their shining purple colour very long, and make part of the winter decorations of a chimney-piece; but for this purpose, the back of every coloured scale of the calyx should be drawn, while fresh, over the edge of a blunt knife, to keep the flower open after it is dried. The *stem* is erect, branching, bearing linear-lanceolate, white, cottony *leaves*, and numerous *flowers*, an inch or more in diameter. The outer *calyx-scales* are membranous and shining, pale, quite smooth, each with a red or brownish mid-rib, most conspicuous upwards, and terminating in a small awn-like point.

In the variety β the *flowers* are of a smaller diameter, and the *calyx* spreads less; but we do not find that its outer scales are more acute, though somewhat variable in that respect; the inner are less strikingly purple, and turn browner as they fade. This variety we have from the Valais, as the undoubted plant of Haller, sent by the late Mr. Davall. Both kinds have a pleasant aromatic scent, different from the strong odour of the following.

2. X. *cylindraceum*. Cylindrical Xeranthemum. Sm. Prodr. Fl. Græc. n. 2046. (X. orientale, flore minimo, calyce cylindraceo; Tourn. Cor. 38. X. oleæ folio capitulis simplicibus, incanum, fœtens, flore purpurascente minore; Moris. v. 3. 43. sect. 6. t. 12. f. 1.) — Outer calyx-scales elliptical, pointless, woolly at the keel; inner lanceolate, erect.—Native of Germany and Asia Minor. Gathered by Dr. Sibthorp on the Bithynian Olympus, or in its neighbourhood. Seeds of this species were given to Mr. Davall by professor Lachenal at Basle, for the common *X. annuum*, as figured by Haller; but on seeing the real plant of that author, above described, from the country of the Valais, he allowed them to be distinct. Mr. Davall first detected the true specific difference, in the woolly scales of the *calyx*, which, moreover, want the red mid-rib of the preceding species. Morison indeed describes this mid-rib, which proves that he confounded *X. annuum β*, as many other people have done, with our *cylindraceum;* for Mr. Davall observed the strong disagreeable smell in his specimens, by which Morison characterizes the plant before us.

3. X. *orientale*. Oriental Xeranthemum. Willd. n. 3. Ait. n. 3. (X. annuum γ; Linn. Sp. Pl. 1201. X. orientale, fructu maximo; Tourn. Cor. 38. X. oleæ folio, capitulis compactis; Moris. v. 3. 44. sect. 6. t. 12. f. 4. Jacea oleæ folio, capitulis compactis; Bauh. Pin. 272. J. incana, folio oleæ; Dalech. Hist. 1193. Lob. Ic. 545. f. 1.)—Outer calyx-scales roundish, membranous; inner ovate, pointed, erect. Crown of the seed ovate, awned, longer than the calyx.—Native of Armenia and Syria. The *leaves* of this species appear to be broader and more elliptical than either of the foregoing. But its most striking difference is visible in the ovate scales, forming the crown of the *seeds*, each of them ending in a long point, far overtopping the upright radiant scales of the *calyx*. We have never seen a specimen, but the figures above cited render the plant sufficiently intelligible. Willdenow describes the *flowers* the size of *X. annuum*, or larger. Surely Lamarck's t. 692. f. 2. cannot be intended for this plant! We know nothing answerable to that figure.

Xeranthemum, in *Gardening*, contains plants of the herbaceous, flowering, annual kinds, in which the species cultivated are, the annual xeranthemum, or common eternal flower (X. annuum); the reflexed-leaved eternal flower (X. retortum); the golden eternal flower (X. speciosissimum); the silvery eternal flower (X. sesamoides); the proliferous eternal flower (X. proliferum); the leafy-flowered eternal flower (X. vestitum); and the imbricated eternal flower (X. imbricatum). As to the species of Xeranthemum, see the preceding article.

The first is an herbaceous flowering plant, of which there are varieties with large white flowers, with double white flowers, with double purple flowers, and with double violet-coloured flowers.

Method of Culture.—In the first sort and varieties, the culture is readily effected by sowing the seeds in pots of light fresh mould, in the autumn or spring, or at other seasons for a succession, plunging them in a moderate hot-bed, to bring forward the plants. In the spring they may also be sown in patches where they are to remain, or in beds to be afterwards removed. When the plants have a few inches growth, they should be pricked out in rows a foot apart on beds, or into the borders, clumps, or other places where they are to grow. They should afterwards be kept clean from weeds, and have occasional waterings immediately after pricking out, and afterwards in dry weather.

The other sorts are raised by planting cuttings of the young shoots in the summer, in pots filled with light mould, giving them a little water and shade; or, which is better, plunging them into a hot-bed, and covering them with hand-glasses. When they are become firmly established in the autumn, they should be carefully removed into separate pots, being replaced in the hot-bed till re-rooted, after which they should have the management of other shrubby green-house plants.

The first sort produces a fine effect in the borders, clumps, &c. while growing, as well as in pots when the flowers are taken off; and the other sorts afford variety in green-house collections, among other potted plants of the same kind.

XERASIA, in *Medicine*, the name of a disease, a species of alopecia, in which the hair falls off through a dryness of the part, and want of due nourishment.

Xerasia, in *Animals*, denotes a certain kind of diseased state, which consists in a dryness of the hairs, caused by the want of due and sufficient nourishment and support, from which they decay and fall off. It is met with in such animals as have been starved, and kept and fed in a stinted manner only on poor sorts of food. It is to be removed by a better and more full kind of fodder, and other sorts of keep, and by being turned into a good salt-marsh pasture. See Surfeit.

XEREQUARO, in *Geography*, a town of Mexico, in the province of Mechoacan; 45 miles N.E. of Mechoacan.

XERES, a town of South America, in Paraguay, now in ruins. S. lat. 20° 5′.

Xeres *de Badajos*, or *Xeres de los Caballeros*, a town of Spain, in Estremadura; 72 miles N.N.W. of Seville. N. lat. 38° 17′. W. long. 6° 52′.

Xeres *de la Frontera*, a town of Spain, in the province of Seville, on the Guadalete; near which a battle was fought between the Moors and Goths, in the year 712, in which Roderick, the last king of the Goths, lost his life. The environs are celebrated for that excellent wine corruptly called sherry. The best and richest sort of sherry is called "pagarette," from the Spanish word *pago*, a district, and particularly applied to this vintage. In one aranzado (an acre of vineyard) they plant 1800 vines at regular distances.

tances. It is reckoned a good year if it gives three butts *per* acre, middling if two, and bad if but one: ſome years, however, it yields four or five. The number of inhabitants is eſtimated at 40,000, of whom one-twentieth, Mr. Swinburne ſays, are religious; 15 miles N.N.E. of Cadiz. N. lat. 36° 41′. W. long. 6° 15′.

XERES *de la Frontera*, a town of Mexico, in the province of Zacatecas, with a garriſon of Spaniards to protect the mines; 25 miles S. of Zacatecas.

XERES *de Guadiana*, a town of Spain, in the province of Seville, near the frontiers of Portugal; 74 miles W. of Seville.

XERES *Nueva*, a town of South America, in the province of Venezuela.

XERES. See CHULUTECA.

XERIÇA, a town of Spain, in the province of Valencia; 7 miles N.W. of Segorbe.

XERIFF, in *Commerce*, a money of account in Morocco, which is divided into eight paels.

XERITO, in *Geography*, a ſmall river of Spain, which runs into the Alagon.

XEROCHLOA, in *Botany*, from ξηρος, *dry*, and χλοα, *a graſs*.—Brown Prodr. Nov. Holl. v. 1. 196.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx two-flowered, of two unequal valves, parallel to the hollow of the receptacle, and half ſunk therein; the outer valve ſmalleſt. Corolla of both flowers longer than the calyx, of two valves, awl-ſhaped, membranous, awnleſs. Stamens in the outermoſt flower. Styles in the inner one, combined at the baſe. Nectary none. Seed encloſed in the inner, paper-like, valve of the corolla.

This genus conſiſts of perennial, ruſhy, dry, ſmooth graſſes. *Leaves* awl-ſhaped, ſtraight and ſtiff, with a very ſhort *ſtipula*. *Stem* terminated by alternate ſheaths, each containing from two to four ſhort *ſpikelets*, of few *flowers*. *Xerochloa* is akin to *Apluda*, whoſe character requires correction. *Brown*.

1. X. *imberbis*. Beardleſs Xerochloa. Br. n. 1.—Spikelets awl-ſhaped, ſlightly curved. Inner valve of the male flowers ſmooth.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. X. *barbata*. Bearded Xerochloa. Br. n. 2.—Spikelets lanceolate, ſtraight. Inner valve of the male flowers bearded.—Native of the ſame country. *Brown*.

XERODES, in *Animals*, a term which is applied, and which ſerves to expreſs any ſort of tumour that is attended with the property of exſiccation or dryneſs. See TUMOUR.

XEROMYRON, formed of ξηρος, *dry*, and μυρον, *ointment*, a word uſed by the ancients to expreſs what they do at other times call in expreſs words a dry ointment. It was a compoſition of warm aromatic drugs, or of other things fit for external uſe, but without the fatty ingredients, by which they were uſually reduced into the form of ointments.

XEROPHAGY, Ξηροφαγια, formed of ξηρος, *dry*, and φαγω, *I eat*, among the *Ancients*, the feeding only on dry victuals, which was the practice of the athletæ.

In the firſt ages of the church, ſome, not contented with ſimple faſting, added the xerophagy thereto; abſtaining not only from fleſh and wine, but alſo from all freſh, ſucculent, and vinous fruits. And ſome even brought themſelves to bare bread and water.

Tertullian, in his book De Abſtinentia, cap. 9. ſpeaks of the xerophagia as a thing commendable in time of perſecution.

XEROPHTHALMIA, Ξεροφθαλμια, compounded of ξηρος, *dry*, and οφθαλμος, *eye*, a kind of ophthalmia, in which the eyes itch, and are red, but without ſwelling or watering.

XEROPHYLLUM, in *Botany*, from ξηρος, *dry*, and φυλλον, *a leaf*, a genus founded by Michaux upon *Helonias aſphodeloides* of Linnæus.—Michaux Boreal.-Amer. v. 1. 210. Willd. Enum. 402.—We confeſs ourſelves unable to make out any ſufficient reaſon for this meaſure, either in the author's deſcription, or in the plant itſelf. Mr. Purſh probably was equally puzzled; for he has not even cited the *Xerophyllum* of Michaux, as a ſynonym under the above *Helonias*. It ſeems the baſes of the *ſtamens* are dilated in the *aſphodeloides*, more than in other ſpecies of HELONIAS. See that article.

XEROPHYTA, ſo named by Juſſieu, from ξηρος, *dry*, and φυτον, *a plant*, alluding to the arid habit of this little ſhrub.—Juſſ. Gen. 50. Willd. Sp. Pl. v. 2. 15. Lamarck Illuſtr. t. 225.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Bromeliæ*, Juſſ.

Gen. Ch. *Cal.* none. *Cor.* of one petal, ſuperior: limb in ſix deep ovate-oblong, acute, permanent ſegments; the three outer ones narroweſt, ſpinous-pointed, ſtouteſt, externally glandular. *Stam.* Filaments ſix, inſerted into the lower part of each ſegment, thread-ſhaped, very ſhort, equal; anthers erect, linear, half as long as the corolla. *Piſt.* Germen inferior, turbinate; ſtyle one, ſhort; ſtigma tumid, oblong, undivided. *Peric.* Capſule oval, rough, crowned with the faded corolla, with three cells, and many *ſeeds*.

Eſſ. Ch. Corolla in ſix deep ſegments, permanent; three outermoſt narroweſt, ſpinous-pointed. Stamens inſerted into the baſe of each ſegment. Stigma club-ſhaped. Capſule inferior, of three cells, with many ſeeds.

1. X. *pinifolia*. Fir-leaved Xerophyta. Willd. n. 1.—Gathered by Commerſon, in Madagaſcar. A hard rigid ſhrub, whoſe *ſtem* is round, alternately branched; the wood formed of parallel tubes, as in the generality of the monocotyledonous tribe: *branches* quarter of an inch in diameter, thickly clothed with the imbricated, deeply furrowed, permanent ſheaths of the laſt year's foliage, each crowned with the reflexed baſe of a leaf, by which the whole branch aſſumes a ſingular ſcaly appearance. *Leaves* alternate, two inches, or more, in length, linear, rigid, channelled, ſtriated, with thick entire edges, and a pungent ſpinous point; their baſe ſheathing, fibrous, and ſomewhat woolly. *Flowers* terminal, one or two at the end of each branch, on ſimple ſtalks, an inch long, rough, like the *germen*, with minute prominent glands, of which ſome traces are alſo found on the backs of the three outward ſegments of the *corolla*. The colour, of the inner ſegments at leaſt, appears reddiſh. Each *flower* is about half the ſize of a ſnowdrop. Nothing is known of the ripe *fruit*, in which perhaps ſome better marks, than have hitherto been given, may be found, to diſtinguiſh the eſſential characters of this genus from thoſe of HYPOXIS. See that article.

XEROPKIN, in *Commerce*, a ſilver coin of Goa, in the Eaſt Indies, which is worth 3*s.* 1½*d.* ſterling, nearly.

XEROTES, in *Botany*, ξηροτης, *dryneſs*, a name choſen by Mr. Brown to expreſs the arid ruſhy habit of this genus, in preference to *Lomandra*, by which it is deſignated in the work of M. Labillardiere. This latter appellation, formed of λωμα, *a border*, or rather *fringe*, and ανηρ, *a male*, is deſigned to indicate the occaſionally bordered anthers. It might perhaps have been allowed to remain, as well as many other names which are liable to ſome exception, though the anthers are not properly fringed. — Brown Prodr. Nov. Holl. v. 1. 259. (Lomandra; Labill. Nov. Holl. v. 1. 92.) — Claſs and order, *Dioecia Hexandria*. Nat.

Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juss. *Junceæ*, Brown.

Gen. Ch. Male, *Cal.* Perianth of six regular, ovate, coloured leaves; the three innermost, or perhaps all the six, connected at the base. *Cor.* none, unless the calyx be so called. *Stam.* Filaments six, very short, inserted into the base of each leaf of the calyx; anthers orbicular, peltate. Some rudiments of a *pistil.*

Female, *Cal.* Perianth of six separate, permanent leaves. *Cor.* none. *Stam.* imperfect. *Pist.* Germen superior, ovate, with three furrows; styles three, short, combined at the base; stigmas obtuse. *Peric.* Capsule cartilaginous, coated, of three cells and three valves, with partitions from the centre of each valve. *Seeds* solitary, peltate.

Eff. Ch. Male, Calyx of six leaves; three innermost combined at the base. Corolla none. Anthers peltate.

Female, Calyx of six separate, permanent leaves. Styles three. Capsule superior, coated, of three cells; valves with central partitions. Seeds peltate, solitary.

This New Holland genus consists of perennial herbs, of a dry rigid texture, and a peculiar aspect, resembling the *Junci* and *Calamariæ*. *Root* fibrous. *Stem* none, or generally very short; sometimes divided, and clothed with sheathing foliage. *Leaves* grassy, linear, either flat or channelled, rarely thread-shaped; their base dilated, membranous, half sheathing; their extremity sometimes toothed. *Flowers* terminating the *stem*, or radical *stalk*, either panicled, racemose, spiked, or capitate. Inner leaves of the *calyx* often different from the outer in texture or size. When the *flowers* are sessile, they are invested with imbricated membranous *bracteas;* the male ones are sometimes stalked, without *bracteas*. Bark of the *capsule* at length separating, and occasionally a little pulpy. In some species, the skin of the *seed* adheres so loosely, as to resemble a distinct tunic. The *embryo* is longitudinal, straight, in the bottom of a cartilaginous *albumen*. *Xerotes* is allied in many points to the Palmæ. See that article. *Brown.*

Sect. 1. *Female flowers in solitary heads. Leaves entire at the extremity.*

1. X. *flexifolia.* Spiral-leaved Xerotes. Br. n. 1. (Dracæna obliqua; Thunb. Dracæn. 6. t. 1. f. 2.)—Stem somewhat branched. Leaves shorter than the branches, two-ranked, twisted; their edges rough with minute teeth; their points withering, acute. Male spikes interrupted, somewhat branched longer than the leaves. — Native of New South Wales, from whence specimens were sent us by Dr. White. The *stem* is about a foot high; woody at the base; more or less branched above, clothed with numerous, narrow, smooth, striated *leaves*, an inch or an inch and a half long, spreading in two directions; their sheathing bases imbricated, and bordered with a long, thin, torn, stipulaceous membrane at each side. *Male flowers* small, whitish, in long, mostly branched, rigid-stalked *spikes* or *clusters*, separated into little whorl-like tufts, accompanied by brown scaly *bracteas*. *Female flowers* rather larger, in round solitary heads, terminating short leafy branches in the forks of the stem.

2. X. *mucronata.* Pointed Xerotes. Br. n. 2.—"Stem somewhat branched. Leaves shorter than the branches, but longer than the male spikes, two-ranked, straight, or slightly twisted; their points withering, acute; their margins roughish, with very minute teeth; dilated and entire at the base."—Gathered by Mr. Brown, near Port Jackson, New South Wales, as well as the foregoing.

3. X. *collina.* Hill Xerotes. Br. n. 3.—"Leaves taller than the stem, narrow and straight; rough with marginal teeth; withering and very acute at the point; dilated and jagged at the base. Head of female flowers sessile."—Found by Mr. Brown, on the southern coast of New Holland.

4. X. *glauca.* Glaucous Xerotes. Br. n. 4. —"Leaves taller than the stem, narrow and straight; withering and bluntish at the point; rough with marginal teeth; dilated and jagged at the base. Tufts of flowers in the male spikes sessile."—Gathered on the south coast of New Holland by Mr. Brown.

5. X. *leucocephala.* White-headed Xerotes. Br. n. 5. —"Male, as well as female, flowers capitate. Receptacle woolly. Leaves narrow, smooth-edged, longer than the perfectly simple stalk, bearing one or two heads of flowers. Stem short."—Gathered by Mr. Brown, in the tropical part of New Holland.

Sect. 2. *Female flowers racemose or spiked: male ones racemose or panicled; partial stalks scattered; flowers drooping.*

6. X. *panciflora.* Few-flowered Xerotes. Br. n. 6.—"Flowers few in the male cluster, in distant whorls. Leaves very narrow, acute and smooth; dilated and entire at the base; shorter than the divided stem."—Found by Mr. Brown, near Port Jackson, New South Wales.

7. X. *filiformis.* Thread-shaped Xerotes. Br. n. 7. (Dracæna filiformis; Thunb. Drac. 4. t. 1. f. 1.)—Leaves thread-shaped, semicylindrical, elongated; flattened in front; rough-edged; finely striated at the back; round at the point. Male cluster scarcely branched. Stem short.—Gathered near Port Jackson, New South Wales, by Dr. White, and Mr. Brown. The *root* is woody. *Stem* scarcely any. *Leaves* several, a span or more in length, erect, rigid, very slender; flattened and whitish in front, with a green, striated, central furrow; convex at the back. We do not find that the point is always, as Mr. Brown says, round or cylindrical. *Clusters* much shorter than the leaves, branched in our specimens, as in Thunberg's figure, erect, lax, with rough stalks. *Flowers* scattered, or in pairs, drooping, whitish, small; the outer segments of the *calyx* smaller, and more membranous than the inner. *Bracteas* awl-shaped, acute, at the base of the *partial stalks*. Mr. Brown notices three varieties: α, male perianth nearly globular, twice the length of the partial stalk: β, male perianth nearly globular; partial stalk longer than that part, or the bracteas: γ, male perianth turbinate; partial stalk shorter than it, or the bracteas. The *leaves* seem variable in breadth and flatness.

8. X. *tenuifolia.* Fine-leaved Xerotes. Br. n. 8. —"Leaves thread-shaped, elongated; channelled in front; deeply striated at the back. Male clusters somewhat divided, their branches alternate. Stem short." — Observed by Mr. Brown, on the southern coast of New Holland.

9. X. *gracilis.* Slender Xerotes. Br. n. 9.—"Leaves very long and narrow, channelled; striated beneath; flat and entire at the point. Male panicles lax, alternately branched; partial stalks solitary. Stem short."—Found by Mr. Brown at Port Jackson.

10. X. *denticulata.* Small-toothed Xerotes. Br. n. 10. —"Leaves elongated, thread-shaped, compressed, channelled, with two or three terminal teeth. Male clusters simple or divided. Stem short."—Gathered by Mr. Brown at Port Jackson. We have some specimens which answer to this description, in the teeth of their *leaves*, but they seem nearly akin to *X. filiformis* to be separated from that species, and they exactly accord with Thunberg's *fig.* 1, drawn from a dried specimen. We are not, however, certain of their being Mr. Brown's *denticulata*.

11. X. *laxa.* Loose-flowered Xerotes. Br. n. 11.—"Leaves elongated, linear, flat, entire at the point. Male panicles

panicles loose, with whorled branches, and distant clusters; partial stalks solitary, shorter than the nearly globular perianth, but longer than their minute bractea."—Gathered by Mr. Brown, in the same country with the two last.

Sect. 3. *Flowers either spiked or panicled, their branches and tufts opposite or whorled. Male perianths sessile, imbricated with bracteas. Capsule smooth. Leaves toothed at the end.*

12. X. *rigida.* Rigid Xerotes. Br. n. 12. Ait. Epit. 376. (Lomandra rigida; Labill. Nov. Holl. v. 1. 93. t. 120.)—Stem very short. Stalks and spikes much shorter than the foliage. Leaves two-ranked, cartilaginous; convex beneath; abrupt, with two marginal teeth, at the end; smooth at the edges; dilated and entire at the base.—Gathered by Mr. Brown in the southern part of New Holland. M. Labillardiere found it in Van Lewin's land. *Root* woody. *Leaves* a span in length, full a quarter of an inch in breadth, spreading in two directions, thick, rigid, smooth; greatly dilated, and bordered with a membrane, at the base; singularly abrupt, and three-pointed, at the end. *Common flower-stalk* terminal, thick, sharply two-edged, sometimes triangular, smooth. Tufts of *flowers* one above another, not numerous, forming an interrupted, branched, upright spike; each tuft accompanied by several unequal, lanceolate, acute *bracteas.* Three alternate *stamens*, according to Labillardiere, are longer than the rest, and bear cloven, not bordered, *anthers.*

13. X. *montana.* Mountain Xerotes. Br. n. 13.—"Stem none. Leaves elongated, linear, flat, membranous, smooth-edged; their sharp point with two very short lateral teeth. Female spike undivided, many times shorter than its stalk."—Found by Mr. Brown, near Port Jackson.

14. X. *fluviatilis.* River Xerotes. Br. n. 14.—"Stem none. Leaves elongated, narrow, channelled, smooth-edged, two or three toothed, with an acute sinus, at the extremity. Female spikes simple or divided. Bracteas rather rigid, twice as long as the tufts of flowers."—Gathered by Mr. Brown in the same country, but, as appears by the name, in the vicinity of rivers.

15. X. *longifolia.* Long-leaved Xerotes. Br. n. 15. Ait. Epit. 376.—Stem none. Leaves elongated, linear, coriaceous, erect; irregularly toothed at the point; rough-edged. Panicles lanceolate, rather dense, with opposite branches. Flower-stalk flattish. Anthers uniform.—Gathered near Port Jackson, by Mr. Brown; at the Cape of Van Diemen, by M. Labillardiere. The *leaves* are a foot and a half long, somewhat striated; dilated at the base, and bordered in that part with a membrane, which at length separates, and becomes torn. *Stalk* from nine to twelve inches high, two-edged. *Flowers* more numerous and crowded than in *X. rigida*, n. 12, with long taper-pointed *bracteas. Capsule* ovate, acute, thrice as long as the calyx, chesnut-coloured; pale yellow at the base; its coat separating in irregular fragments.

16. X. *Hystrix.* Porcupine Xerotes. Br. n. 16.—Stem none. Leaves elongated, linear, lax, smooth-edged; somewhat toothed at the extremity. Stalk rather convex on both sides. Male panicles repeatedly compound, with whorled branches. Bracteas leafy, rigid, spinous-pointed.—Sent from the neighbourhood of Port Jackson, among the first botanical communications from thence, by Dr. White. It has also been gathered there by Mr. Brown. We have seen the living plant in some garden near London, possibly at Kew, and were much struck with the delightful fragrance of its copious panicles of male flowers, resembling the scent of *Crassula coccinea*, *Mesembryanthemum noctiflorum*, or a Bergamot Pear. Yet it does not occur in *Hort. Kew.* The *leaves* are a foot and a half or two feet long, spreading. *Flower-stalks* of the male plant numerous, erect, two-edged, though convex at each side, from one to one and a half feet high, somewhat zigzag occasionally, each bearing a flattish *panicle*, from six to fourteen inches long, composed of numerous triangular *branches*, from four to eight in a whorl, beset with numerous tufts, or whorls, of sessile *flowers*, accompanied by several chaffy, inner *bracteas*, and subtended by about three long, spreading, external ones, with needle-like points. The *flowers*, and whole *panicle*, are of a delicate straw-colour, with a tinge of brown about the *calyx* or *anthers*. We have not seen the female plant. This species well deserves a place in the green-house, for the singularity of its appearance, as well as for its fine smell.

17. X. *arenaria.* Sand Xerotes. Br. n. 17.—"Stem none. Leaves elongated, linear, smooth-edged, jagged and toothed at the end. Male panicle simple, with opposite branches. Tufts of flowers globose. Bracteas awl-shaped, reflexed. Flowers obtuse."—Discovered in the tropical part of New Holland, by Mr. Brown.

Sect. 4. *Male panicle whorled. Flowers stalked, in drooping tufts. Capsule rugged. Leaves entire at the point.*

18. X. *distans.* Distant-flowered Xerotes. Br. n. 18.—"Stem none. Leaves very long, channelled, very rough at the edges. Male panicle with undivided branches, and distant tufts of flowers. Partial stalks shorter than the calyx."—Native of the tropical part of New Holland. The male *panicles* are a foot long; *calyx* about a line and a half. *Brown.*

19. X. *media.* Intermediate Xerotes. Br. n. 19.—"Stem none. Leaves very long, channelled, smooth-edged. Branches of the male panicle undivided. Flowers five or six in each tuft; their partial stalks scarcely so long as the very short calyx. Female spike divided in the lower part, each branch bearing one head of flowers."—From the same country as the last. *Calyx* only one-third of a line in length; male *panicle* six inches. *Brown.*

20. X. *decomposita.* Compound Xerotes. Br. n. 20.—"Stem none. Leaves very long, channelled, smooth-edged. Male panicle repeatedly compound. Tufts of few flowers. Partial stalks hardly so long as the calyx."—Found also in the tropical part of New Holland. Male *panicles* a foot long. *Brown.*

21. X. *multiflora.* Many-flowered Xerotes. Br. n. 21.—"Stem none. Leaves very long, channelled; smooth at the back and edges. Male panicle with undivided branches, each bearing from one to three many-flowered tufts. Partial stalks longer than the calyx."—Found by Mr. Brown in the same country as the four preceding species.

22. X. *æmula.* Rough-long-leaved Xerotes. Br. n. 22.—"Stem none. Leaves very long, channelled, erect; rough at the back and edges. Male panicle with undivided branches, each bearing from one to three many-flowered tufts. Partial stalks longer than the calyx."—Found by Mr. Brown, in the country near Port Jackson, New South Wales. The roughness of the *leaves* seems chiefly to distinguish this species from the last. We have seen no specimens of either.

23. X. *Banksii.* Banksian Xerotes. Br. n. 23.—"Caulescent. Leaves two-ranked, flat, rough-edged. Female panicle dense, about the length of its two-edged stalk; branches quadrangular, very short."—Gathered by sir Joseph Banks, in the tropical part of New Holland, where it was not found by Mr. Brown.

Sect. 5. *Flowers of each sex in a cylindrical catkin-like spike.*

24. X.

24. X. *hastilis.* Spear-stalked Xerotes.—" Stem none. Spike very long. Stalk round. Leaves elongated."—Gathered by Mr. Brown, on the southern coast of New Holland. The habit of this species appears, by the above characters, to differ widely from the rest of its genus, rather approaching a Xanthorrhœa. See that article.

XEROTRIBIA, formed of ξηρος, *dry*, and τριβω, *I rub*, a term used by authors to express a dry friction, a rubbing of some affected part with the hand or otherwise, to recall the warmth and circulation.

XERTE, in *Geography*, a river of Spain, which passes by Placentia, and runs into the Alagon.

XERTIGNY, a town of France, in the department of the Vosges; 7 miles E. of Epinal.

XERUMENHA, or Jerumenha, or *Gerumenha*, a town of Portugal, in Alentejo; 10 miles S. of Elvas. N. lat. 38° 35′. W. long. 6° 58′.

XERXENA, in *Ancient Geography*, a country of Asia, on the confines of Lesser Armenia, of which it makes a part. Strabo.

XERXES, in *Biography*, was the son of Darius I. by Atossa, the daughter of Cyrus; and on the death of his father, succeeded to the crown of Persia, in the year 485 B.C. Having in the second year of his reign subdued the revolted Egyptians, and committed them to the government of his brother Achæmenes, he determined to renew the invasion of Greece, in which Darius had been disappointed; and for the success of his expedition, he formed an alliance with the Carthaginians, on condition of their making an attack on the Greek colonies in Italy and Sicily, so that they might not have it in their power to assist the mother-country. His preparations were immense, and occupied several of the first years of his reign. Having provided a large navy, he formed a project of cutting a canal through mount Athos, of sufficient breadth to admit two galleys a-breast; and to this undertaking, which some have regarded as a fiction, he devoted three years. He also constructed a bridge of boats across the Hellespont, in order to convey his army from Asia to Europe; and as the first bridge which had been laid was demolished by a storm, he not only manifested his childish rage by ordering 300 lashes to be inflicted on the sea, and a pair of fetters to be thrown into it, but his tyrannical and cruel disposition by beheading those to whom the conduct of the work had been committed. The number of sea and land forces which he employed in this expedition is said to have amounted to two millions and a half, to which we may add as many more attendants. When he ascended a high tower at Abydos, and took a view of the immense number that covered the sea and surrounding plain, his pride and triumph are said to have given way to tears, when the reflection occurred, that the brevity of human life was such as not to allow one of this countless host to survive the lapse of 100 years. Without detailing the events of this disastrous expedition, which are the proper subjects of history, we shall merely mention that it terminated in the defeat of Xerxes's navy at Salamis, and the subsequent overthrow and dispersion of Mardonius's army of 300,000 men; and specify some traits of the disposition and character of this ambitious despot. For his ignominious treatment of Leonidas, we refer to his article. Upon his taking possession of Athens, he wreaked his vengeance on the buildings and the temples, and dispatched a special messenger to his uncle Artabanus, to inform him of this inglorious triumph. Having erected a throne on a lofty mountain, in order to view the expected victory at Salamis, the event produced such consternation, that he suddenly left Mardonius and the army, and hastened to the Hellespont, where finding his bridge shattered by storms, but still haunted with terror, he intrusted himself in a fishing-boat, and hastened to Sardes; but when Mardonius was defeated, and all his hopes of conquering Greece were frustrated, he quitted Sardes, after having given orders for the demolition of all the temples in the Greek cities of Asia, and proceeded with all possible expedition to the Persian frontier. The other traces of his disgraceful expedition were the records of the cruelties and debaucheries exercised by himself and his family. So much at length did Xerxes become the object of contempt and hatred, that a conspiracy was formed among his own guards, which terminated in his murder during sleep, in the 21st year after his accession, B.C. 465. Herodotus. Diodorus. Anc. Un. Hist.

XESTA, Ξεστες, an Attic measure of capacity, answering to the Roman sextary.

XESTES, an ancient Greek liquid measure, which is = 2 cotyli. See Measure.

XIAMETLA, in *Geography*, a town of Mexico, in the province of Xalisco; 30 miles S.E. of Purification.

XIASSI, a town of the duchy of Warsaw; 20 miles S.S.E. of Posen.

XIBACA, a town of Japan, in the island of Niphon; 120 miles S.W. of Meaco.

XICOCO, called also *Sikoko*, and *Sikokf*, an island of Japan, about 90 miles in length, and about half as many in breadth, divided into several provinces, situated near the south-west extremity of Niphon, from which it is separated by a strait, full of small islands, and to the north-east of Ximo. It has several convenient harbours, and many towns within the country. N. lat. 33° 30′. E. long. 132°.

XICONA. See Xixona.

XILCA. See Chilca.

XILOA. See Quiloa.

XILOCA, a river of Spain, which rises in the south part of Aragon, about 7 miles N.E. of Albaracin, and at Calataiud changes its name to Xalon.

XILOTEPEC, a town of Mexico, in the province of Guasteca; 90 miles S.S.W. of Panuco.

XILVAN, a town of the principality of Georgia; 20 miles N. of Gory.

XIMABARA, a town of Japan, on the south coast of the island of Ximo, on a gulf to which it gives name; 33 miles E. of Nangasaki. N. lat. 32° 45′. E. long. 132° 7′.

XIMAGUINO, a town of Japan, in the island of Xicoco; 10 miles S. of Awa. N. lat. 33° 50′. E. long. 130° 30′.

XIMENA, a town of Spain, in the province of Seville. Near this town Crassus is said to have concealed himself in a cave, till Marius and Cinna were overthrown by Sylla; 24 miles E. of Medina Sidonia.

XIMENES, Francis, *Cardinal*, in *Biography*, was born in 1437, in Old Castile, and educated at Alcala and Salamanca. Renouncing preferments which he obtained in his youth, he assumed the habit of St. Francis, in a monastery of the Observantines, one of the most rigid orders of monks in the Romish church. Distinguished by his austerities and devotional practices, he became confessor to queen Isabella; and still retaining his customary modes of living, he so far engaged her respect and attachment, that he was nominated by her to the archbishopric of Toledo, the richest benefice in Europe next to the papal see; but his real or affected reluctance to accept this high preferment could be overcome only by the authority of the pope. In this elevated station he maintained his strict adherence to the rigours of the order to which he belonged, and so far from relaxing in in his feverities, he indulged them to the extreme of felf-mortification and penance. Having thus acquired a complete maftery over his own paffions, and poffeffing political talents in a very high degree, he was thought peculiarly fitted to exercife dominion over others; and accordingly Ferdinand and Ifabella entrufted him with a principal fhare in the adminiftration. When a ftrong party was formed among the Caftilians to deprive Ferdinand of the authority as regent, devolved upon him by the will of the queen, he was deferted by every perfon of diftinction except Ximenes and two nobles; and after he had refigned it to the archduke Philip, he again acquired it upon Philip's death in 1506, by the influence of Ximenes. In 1507 Ximenes was created a cardinal by pope Julius II.; and in the following year he undertook the conqueft of Oran, and of other places on the coaft of Barbary, with an armament, the expence of which he offered to defray out of his own revenues, and he fucceeded in this enterprife. Such was Ferdinand's confidence in the abilities and integrity of the cardinal, that when he was dying in 1516, he appointed him regent of Caftile until the arrival of his grandfon Charles. Although he was then in his 79th year, he took an active part in fecuring the throne to Charles, though in his own judgment he difapproved the king's conduct, who in his affumption of power contended the declared opinion of the Cortes. With no lefs firmnefs and inflexibility, he profecuted a plan for extending the royal authority, which the nobility had very much circumfcribed. The meafures which he adopted for this purpofe excited violent oppofition, but he perfifted, and ultimately fucceeded. During his adminiftration he was alfo engaged in two foreign wars; one for the prefervation of the kingdom of Navarre, in which he was fuccefsful, and another againft Horuc Barbaroffa, who advanced himfelf from the condition of a corfair to the fovereignty of Algiers and Tunis, in which the Spaniards were totally defeated. When Charles was prevailed upon by Ximenes to vifit Spain, the cardinal took a journey towards the coaft to meet his majefty; but being difabled to proceed by the attack of a diforder, fuppofed to be the effect of poifon, he requefted an interview with the king; but Charles having conceived prejudices againft him, returned a cold anfwer, with permiffion for his retirement to his diocefe, that he might finifh his days in tranquillity. In a few hours after the receipt of this letter, he expired November 1517, at the age of 80 years.

Ximenes was held in high eftimation by his fuperftitious countrymen, under a delufive idea that he poffeffed the gift of prophecy, and a power of working miracles. But his more unequivocal claims to their refpect were founded on his extraordinary talents and learning, his liberal patronage of literature, and the munificence of his public charities, to which he devoted the immenfe revenues of his archbifhopric. At Alcala he built the magnificent college of St. Ildefonfo, endowed with forty-fix profefforfhips, and conducted under excellent regulations. Here he printed the Complutenfian Polyglott, (fee POLYGLOTT,) the Mozarabic liturgy, and the theological works of Toftatus. Here he alfo eftablifhed a fplendid monaftery for the education of indigent females of quality, which ferved as a model for that of St. Cyr, under Lewis IV. The granaries which he constructed remained without decay for centuries; and upon the whole he was juftified in declaring on his death-bed, that to the beft of his knowledge he had not mifapplied a crown of his revenue. Robinfon's Charles V. vol. ii.

XIMENES, in *Geography*, a town of Spain, in the province of Leon; 10 miles S. of Aftorga.

XIMENESIA, in *Botany*, Cavan. Ic. v. 2. 60. Ait. Hort. Kew. v. 5. 85, a genus which can by no means be feparated from PALLASIA. (See that article, n. 3.) Nothing can be more trifling as a generic, or even fpecific diftinction, than the difference between the fyngenefious orders of *Polygamia-fuperflua*, and *P. fruftranea*, of the Linnæan fyftem, provided the form of the *florets* be alike. The *piftil*, of which rudiments are found in feveral genera of the latter, may occafionally become perfect, as it does now and then in *Helianthus*, and this overfets the diftinction.

XIMENIA, owes its name to Plumier, who confecrates this genus to the memory of the Rev. Father Francis Ximenes, a Spanifh monk, one of the twelve Francifcan friars who firft preached Chriftianity to the Mexicans. Being well fkilled in the language of the country, he collected a great ftore of information concerning the properties and medical ufes of the plants and animals of New Spain, and efpecially of Mexico; whence he compofed a work, printed in four books, at Mexico, in 1615, which is quoted with approbation by De Laet, in many parts of his own publication. It is fome confolation to find any of thefe apoftles turning their minds to the ftudy of their Maker's works; as we cannot fuppofe fuch to have been contaminated with that infernal fpirit, which renders the whole hiftory of the Spaniards in America a foul reproach to humanity, and to Chriftianity itfelf, fo proftituted or fo mifunderftood!—Plum. Nov. Gen. 6. t. 21. Linn. Gen. 190. Schreb. 255. Willd. Sp. Pl. v. 2. 338. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 2. 352. Juff. 259. Lamarck Illuftr. t. 297. Poiret in Lam. Dict. v. 8. 804.—Clafs and order, *Octandria Monogynia*. Nat. Ord. *Aurantia*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very fmall, in four pointed, permanent fegments. *Cor.* Petals four, oblong; hairy internally; their lower half erect, forming a tube; their upper part revolute. *Stam.* Filaments eight, erect, fhort; anthers erect, longer than the filaments. *Pift.* Germen fuperior, oblong; ftyle thread-fhaped, the length of the ftamens; ftigma obtufe. *Peric.* Drupa nearly ovate. *Seed.* Nut folitary, roundifh.

Eff. Ch. Calyx four-cleft. Petals four; hairy internally; revolute at the upper part. Drupa fuperior. Nut folitary.

Obf. Plumier's figure reprefents but three *petals*. Linnæus has left a note, that his correfpondent Allamand found but feven *ftamens*. Swartz and Jacquin defcribe eight.

1. X. *americana*. Thorny Ximenia. Linn. Sp. Pl. 497. Hort. Cliff. 483. Willd. n. 1. Ait. n. 1. Swartz Obf. 149. (X. multiflora; Jacq. Amer. 106. t. 177. f. 31. X. aculeata, flore villofo, fructu luteo; Plum. Ic. 260. t. 261. f. 1. Heymaffoli fpinofa; Aubl. Guian. 324. t. 125? and H. inermis; *ibid.* 325?)—Branches fpinous. Leaves oblong. Stalks many-flowered.—Native of the neighbourhood of Carthagena, as well as of Hifpaniola, flowering in September and October, and ripening fruit in December. *Jacquin.* Of the rocky fhores of Hifpaniola, flowering in July. *Swartz.* We believe Linnæus never faw any fpecimen of this, except in Cliffort's herbarium. That before us was given to the younger Linnæus by fir Jofeph Banks. Though Miller might have the plant at Chelfea in 1759, it would now probably be vainly fought for in any collection. The *ftem* is either fhrubby or arboreous. Young *branches* fpinous, round, ftriated. *Leaves* two or three together, in alternate tufts, from buds of many years' duration, ftalked, elliptic-oblong, obtufe with a minute point, rarely emarginate, entire, fingle-ribbed, fmooth on both fides, about two inches long. *Footftalks* quarter of an inch

inch long, smooth. *Thorns* lateral, erect, longer than the footstalks, awl-shaped, stout, but sparingly produced. *Flower-stalks* axillary, or rather from the same bud as the leaves, not half their length, deflexed, round, divided into from three to five smooth, single-flowered partial stalks. *Calyx* spreading quadrangular. *Petals* four, whitish, shaggy from the base almost to the apex, on the inside; smooth externally. *Fruit* the size of a small apple, yellow when ripe. Jacquin says the pulp is sweetish, eaten by children and negroes, and that the smell of the *flowers* is extremely sweet, as well as powerful, something like burnt frankincense. Aublet compares them to cloves. His figure, if it belongs to the same plant as our's, is very faulty; but we rather presume it must be a species nearly akin, whose *flowers* are really axillary, and, like the *fruit*, only one-third the size of the Linnæan plant; their *petals* finely downy, not shaggy, all over their inner surface. Still, without seeing a specimen, we dare not describe it as distinct.

2. X. *elliptica*. Elliptical Ximenia. Forst. Prodr. 27. Willd. n. 2.—"Thorns none. Leaves elliptic-lanceolate. Stalks many-flowered."—Found by Forster in New Caledonia. This is known only by the above characters, which are not so discriminative as could be wished, the *thorns* being variable in the original species, and in the plant of Aublet.

3. X. *inermis*. Jamaica Ximenia. Linn. Sp. Pl. 497. Willd. n. 3. (Amyris? arborescens, foliis ovatis glabris, vetustioribus confectis; petiolis submarginatis; floribus solitariis; Browne Jam. 209.)—"Thorns none. Leaves ovate. Stalks single-flowered." — Native of Jamaica. Browne describes it as a bushy *tree*, not above eight or nine feet high; its *trunk* about four and a half inches in diameter. *Leaves* oval, not above an inch long, standing very thick upon the smaller branches. *Petals* hairy on the inside towards the base. *Drupa* ovate-oblong.

M. Poiret describes, in Lamarck's Dictionary, a plant by the name of *X. ferox*, n. 3, which we can scarcely refer to this genus; the *flowers* being five-cleft; *petals* linear, smooth on both sides; and *stamens* prominent. This is a spinous *shrub*, found in Hispaniola, with nearly orbicular, coriaceous *leaves*, above an inch long, and either solitary or umbellate axillary *flowers*. The *thorns* are three or four inches long, very sharp, sometimes leafy.

Jussieu speaks of a *X. ægyptiaca*, as described in the *Species Plantarum* of Linnæus, though omitted subsequently in his *Systema*. We are unable to discover this, and Jussieu, like Caspar Bauhin, unhappily omits to cite pages. We do, however, find in Linnæus's copy of Plumier's *Genera Plantarum*, which once belonged to the French botanist Isnard, a note of the latter under *Ximenia*, that "the *Agihalid* of Alpinus, *Pl. Ægypt.* 38, appears to belong to this genus." The rude wooden cut does indeed countenance such an opinion, especially the *flowers;* but the author compares the *fruit* to that of *Sambucus Ebulus*, describing it moreover as bitterish and astringent. Now *Sambucus* has nothing in common with *Ximenia*. The plant of Alpinus, which was brought from Ethiopia, may be a thorny *Lycium*, but we cannot refer it to any known species.

XIMO, or Kiusiu, in *Geography*, an island of Japan, and second in size and eminence, situated to the S.W. of Niphon, from which it is divided by a narrow channel. Its circumference is supposed to be upwards of 300 miles, exclusive of the bays and creeks. It has considerable numbers of cities and towns, with some good harbours. N. lat. 32° 40′ to 34°. E. long. 130° 50′ to 133° 30′.

XIMONOSEQUI, a sea-port town of Japan, on the S.W. coast of Niphon, with a good harbour, capable of containing 300 vessels. It is a place of trade, and surrounded with walls. N. lat. 33° 56′. E. long. 132° 20′.

XINGU, a river of South America, which rises somewhere near S. lat. 17°, and is first called "Paranatinga;" it afterwards takes a northerly course of about 900 miles, and runs into the Amazons river, 20 miles E. of Paru, in the government of Para.

XIPHIAS, Ξιφιας, the name of the *sword-fish;* which see. This fish is cut in pieces by the Sicilians, and salted. The process was anciently performed particularly at the town of Thurii, in the bay of Tarentum, and hence the fish was called "Tomus Thurianus." (Plin. l. 32. c. 11.) Besides the Xiphias Gladius, described under the article Sword-*Fish*, Dr. Shaw has enumerated some other species, such as the following:—

Platypterus, or sword-fish with extremely broad back-fin, and very long sharp-pointed thoracic appendages; the *Guebecu* of Marcgrave, and *Scomber gladius* of Black. This species, in the appearance of the long and sharp-pointed process of the upper jaw, is nearly allied to the common sword-fish, but in other respects materially differs from it. It is found twenty feet in length, and sometimes much longer. Its general colour is a silvery blueish-white, except on the back, head, tail, and fins, which in the living animal are of a deep blue. The strength of this fish is such, that it pierced the bottom of an East Indian ship with such force as completely to imbed its snout almost to its base; and if it had not been killed by the violence of the effort, but had been able to withdraw its snout, the ship must have been leaky, and thus have foundered. This power of transfixing vessels is mentioned by Pliny. This fish is found not only in the Brasilian and East Indian seas, but also in the Northern ocean; and it is said to be a great enemy to whales, with which it has frequent combats. Dr. Black says, that when this species does not exceed four feet in length, it is considered as an eatable fish; but when it exceeds that length, it is too coarse.

Makaira, the blackish sword-fish with snout of middling length, and two bony tubercles on each side of the tail. This is a species lately discovered, and described by Cepede under the title of "Makaira." This fish was cast on the isle of Rhé, near Rochelle in France. Its length was 330 French centimetres, and its weight 365 kilogrammes; its colour was blackish. It was eaten by many of the inhabitants of Rochelle, and found to be tolerable food, though somewhat dry; the flesh was white. The "round-snouted sword-fish" is also described by Cepede, from the sword or snout preserved, with the fore-part of the head, in the Paris Museum. Shaw's Zoology, vol. iv. part i.

Xiphias is also used to express a fiery meteor, in form of a sword. See Acontias.

Xiphias, in *Astronomy*. See Dorado.

XIPHIDIUM, in *Botany*, from ξιφος, *a sword*, alluding to the sword-shaped leaves. The name occurs in Pliny, and was adopted by Loefling for the present genus, which Linnæus, in publishing Loefling's papers, sunk in Ixia (see that article); but subsequent writers have restored it, the *germen* being superior, and the *corolla* of six separate *petals*. —Schreb. Gen. 37. Willd. Sp. Pl. v. 1. 248. Vahl Enum. v. 2. 162. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 1. 107. Aubl. Guian. 33. Swartz Ind. Occ. 79. t. 2. Juss. 59. Lamarck Illustr. t. 36.—Class and order, *Triandria Monogynia*. Nat. Ord. *Ensatæ*, Linn. *Iridibus affine*, Juss. *Hæmodoraceæ*, Brown?

Gen. Ch. *Cal.* none. *Cor.* inferior, of six petals, regular, permanent; the three outer ones largest. *Stam.*

Filaments

Filaments three, linear, oppofite to the three inner petals; anthers ovate. *Pift.* Germen fuperior, globofe; ftyle thread-fhaped; ftigma fimple. *Peric.* Capfule at firft flefhy, then dry, roundifh, with three furrows, and three cells. *Seeds* numerous, roundifh, pointed, inferted into a flefhy, central, nearly globular, receptacle.

Eff. Ch. Corolla regular, of fix petals. Capfule fuperior, of three cells, with many feeds.

Obf. The regularity of the *flower* readily diftinguifhes this genus from Wachendorfia. See that article.

1. X. *floribundum.* Many-flowered Xiphidium. Swartz Prodr. 17. Ind. Occ. 80. Vahl n. 1. (X. albidum; Lamarck Illuftr. v. 1. 131. X. album; Willd. n. 1. Ixia; Linn. in Loefl. It. 179.)

β. X. cæruleum; Aubl. Guian. 33. t. 11. Willd. n. 2. Ait. n. 1.—Native of South America, as well as of Tobago and St. Kitt's. Mr. Maffon is recorded by Dr. Swartz as having gathered the white-flowered kind, α, at the foot of fome hills, near Sandy Point, in the laft-mentioned ifland: β was found in Guiana, by Aublet. We have a fpecimen of the latter from Miller's herbarium, gathered in fome part of South America. The *root* is perennial, fomewhat creeping, jointed. *Stem* a foot or more in height, round, fimple, as thick as the little finger; leafy in the lower part; more or lefs minutely hairy. *Leaves* numerous, alternate, feffile, fomewhat fheathing, fword-fhaped, pointed, entire, or minutely ferrated, ftriated with numerous longitudinal ribs. *Clufter* compound, terminal, erect, of many fpreading, fimply racemofe, branches, more or lefs hairy, with a very minute *bractea* under each partial flower-ftalk. *Flowers* not half an inch in diameter. Three outer *petals* green, and often downy at the back; white or blue in front, as the three inner ones are on both fides.

Swartz and Vahl have united the two fuppofed fpecies of other authors. The latter afferts the blue-flowered variety to be fometimes entirely fmooth in its *leaves* as well as *flowers*.

XIPHILINUS, John, in *Biography*, was born at Trebizond, in the 11th century, and having paffed the earlier period of his life in a monaftery on mount Olympus, was advanced to the patriarchate of Conftantinople, which office he held till his death in 1075. Befides a fermon printed in the Bibliotheca Patrum, he is reputed by fome to be the author of an "Abridgment of the Hiftory of Dion Caffius," in Greek, written faithfully, which was printed at Paris in 1592, fol.

XIPHION, or Xiphium, in *Botany*, ξιφιον of Diofcorides, fo called from the fword-fhaped leaves, appears evidently, by the account of that ancient writer, to be *Gladiolus communis*, Linn. Sp. Pl. 52, our Common Cornflag. *Xiphium* neverthelefs is retained by Linnæus as the fpecific name of a common, but very elegant and fragrant bulbous *Iris*, with blue and yellow flowers. To this it feems he was led by Tournefort, who applies the name of *Xiphion* to the whole tribe of bulbous-rooted fpecies of *Iris*, of which he makes a feparate genus, characterized by the root. This is rather unfortunate, as the Linnæan *Iris Xiphium* has rather awl-fhaped than fword-like *leaves*.

XIPHOIDES, Ξιφοειδες, in *Anatomy*, a cartilage placed at the bottom of the *fternum*, called alfo *enfiformis*.

It is about an inch long, and fhaped like the point of a fword. Whence its appellation, from ξιφος, *fword*, and ειδος, *figure*.

XIPHONIÆ Promontorium, in *Ancient Geography*, a promontory of Sicily, near port Xiphonius.

XIPHOS, Ξιφος, among the Athenians, a capital punifhment, by beheading with the fword.

XIPIXAPA, in *Geography*, a town of South America, in the audience of Quito; 80 miles N.W. of Guayaquil.

XIQUACAN, a town of Mexico, in the province of Mechoacan; 50 miles S.E. of Zacatula. N. lat. 18° 4'. W. long. 102° 34'.

XIQUENA, a town of Spain, in the province of Murcia; 15 miles W.N.W. of Lorca.

XIQUITO, a town of Japan, in the ifland of Ximo; 16 miles S. of Naka. N. lat. 32° 20'. E. long. 133° 13'.

XIR, a word ufed by the chemifts to exprefs mercury.

XISINUM, a word ufed by fome of the chemical writers to exprefs vinegar.

XIVERT, in *Geography*, a town of Spain, in Valencia; 7 miles N.W. of Segorbe.

XIVRY le Franc, a town of France, in the department of the Mofelle; 9 miles S. of Longwy.

XIXONA, a town of Spain, in Valencia. In the neighbourhood of this town a great number of perfons are employed annually to collect the drug called Kermes, and a fmall diftrict, called *de la Grana*, produces fome years to the value of 30,000 dollars; 13 miles N. of Alicant. N. lat. 38° 32'. W. long. 0° 42'.

XIZABRAS, mountains of South America, in the province of Venezuela.

XOANA, in *Ancient Geography*, a town of India, on this fide of the Ganges.

XOCHIOCOTZO, in *Botany*, a name ufed by fome authors for the tree which produces the liquid amber, and is called the fweet gum by the inhabitants of the Weft Indies.

XOCHITENACATL, in *Ornithology*, a name given by fome to the toucan, or American great-beaked magpye.

Xochitenacatl *Alia*, the name of a bird defcribed by Nieremberg, of the nature of the toucan, or Brafilian magpye.

It is of the fize of a pigeon; its beak is large and thick, and is black and pointed; its wings and tail are variegated with black and white; it has a large black mark reaching from its back to the breaft; the anterior part of the wings is yellow, the reft of its body of a pale colour, and the legs and feet brown. It always is found among the fweet-flowering trees, and is not uncommon in many parts of South America. Ray.

XOCOTLAN, or Xocutlan, in *Geography*, a town of Mexico, in the province of Xalifco; 15 miles S.W. of Purification.

XOCOXOCHITL, the Indian name of the cloveberry-tree, or the *caffia caryophyllata*, the bark of which is ufed in medicine.

XODRACE, in *Ancient Geography*, a town of India, on this fide of the Ganges. Ptolemy.

XOES, an ifland of the Mediterranean, on the coaft of Egypt, near the mouth of the Nile, called "Xebenniticum;" and alfo a town of the fame name. Steph. Byz.

XOIS, a town of Egypt, in the Nome, denominated Xoites Nomos. Ptolemy.

XOLA, in *Geography*. See Sooloo.

XOLO. See Gilolo.

XOMOTL, in *Ornithology*, the name of an American bird, of which the Indians are very fond, making a part of their garments of its feathers.

Nieremberg has given a fhort account of it. It is a webfooted fowl; its back and the upper part of its wings are black, and its breaft is brown. When it is angry, it raifes up the feathers of its head in form of a creft. Ray.

XORULLO,

XORULLO, or JORULLO, *Volcano of*, in *Geography*, a basaltic cone of New Spain, which appeared above ground on the 15th of September 1759, and which is at this day 249 fathoms or 1494 feet above the furrounding plain. It is fituated in the province of Mechoacan, at the diftance of eight leagues from Pafquaro the capital, towards the S.W.; the volcano of Colima being in the fame direction, but at a greater diftance. A delicious and fertile vale, eight leagues in length from N. to S., and three in breadth, was called Xorullo by the Indians, a word in their language fignifying *paradife;* but upon the eruption of the volcano, this valley affumed an infernal afpect, blackened with perpetual fmoke, covered with deformed rocks and afhes, the trees confumed, the earth full of deep breaks and openings, and now forming a hill of confiderable height, crowned with a volcano. A rivulet which fertilized the valley is now fo hot as to burn men and animals who attempt to pafs it, which is peculiarly inconvenient, as it is in the direct road to the copper-mines in this quarter. Before this cataftrophe, there were conftantly heard horrible fubterraneous noifes, and earthquakes were felt, which excited confternation in the inhabitants.

XOXOUHQUITICPATLI, an American name of a ftone of the jafper kind, and of a beautiful green, but ufually pale, and fometimes with a mixture of grey, and variegated in feveral places with fpots of a deeper green.

It is found among the feveral kinds of *lapis nephriticus*, with which that country abounds, and moft of which the Indians celebrate for their virtues againft difeafes; they are not, however, acquainted with any medicinal virtues of this fpecies.

XV. VIR, *Quindecimvir*. See QUINDECIMVIR.

Authors, and efpecially antiquaries, make ufe of fuch abbreviations, which they borrow from medals, and other monuments of antiquity, where thofe names are fo expreffed.

XUAREZIA, in *Botany*, according to De Theis, is a genus dedicated, in the *Flora Peruviana*, p. 20, to Gafpar Xuarez, a Spanifh botanift, who has devoted himfelf to the ftudy of the plants of Italy.

XUCAHA, or XUCAAHI, the name of a plant much famed for its virtues among the ancient Arabians, but unknown at this time.

XUCAR, in *Geography*, a river of Spain, which rifes in New Caftile, and runs into the Mediterranean, 20 miles S. of Valencia.

XUCHES, or ZUCHIS, in *Ancient Geography*, a town of Africa, in Libya. Steph. Byz.

XULI, in *Geography*, a town of Peru, in the diocefe of La Paz, near the weft coaft of lake Titicaca, chiefly inhabited by Indians, and governed by Indian magiftrates; 100 miles N.N.W. of La Paz. S. lat. 16° 25′. W. long. 70° 6′.

XULI, a fmall ifland in the Pacific ocean, near the coaft of Peru. S. lat. 16° 50′.

XULLA, or XULLOE, an ifland in the Eaft Indian fea, about 42 miles long, and from 10 to 15 broad. The Englifh fome years fince formed a fettlement in this ifland, but from the badnefs of the foil, and fome other circumftances, they were induced to abandon it, and remove to Balambangan, on the coaft of Borneo. S. lat. 1° 53′. E. long. 125°.

XULLABELLA, an ifland in the Eaft Indian fea, about 25 miles long, and 6 broad. S. lat. 2° 15′. E. long. 126° 12′.

XULLAMANGOLA, an ifland in the Eaft Indian fea, about 30 miles long, and 10 broad. S. lat. 1° 54′. E. long. 125° 42′.

XUN, a city of China, of the fecond rank, in Se-tchuen; 150 miles S.W. of Pao-king. N. lat. 30° 18′. E. long. 103° 20′.

XUNDALE, a town of South America, in the province of Popayan; 8 miles S.W. of Sante Fe de Antioquia.

XUQUI. See JUGUI.

XUTHIA, in *Ancient Geography*, a country of Sicily. Diod. Sic. It is reprefented as a town by Steph. Byz.

XUXUY, in *Geography*, a town of La Plata, which chiefly trades in cattle, fold to the miners of Potofi, and brought in confiderable number to the great fair of Salta; but now in a declining ftate. See JUJUY.

XYLAGIUM, a name given by fome authors to the lignum fanctum, or guaiacum.

XYLANDER, WILLIAM, in *Biography*, whofe family name was *Holtzmann*, was born in indigent circumftances at Augfburg, in 1532, and enabled by public liberality to ftudy at Tubingen and Bafil, in the latter of which places he took the degree of M.A. in 1556. In 1558 he was invited to undertake the Greek profefforfhip at Heidelberg; where, with all the difadvantages of penury, he purfued his literary labours, and acquired an amplitude of erudition, which comprehended the learned languages, hiftory, poetry, mufic, philofophy, and phyfics. The works by which he is chiefly known are Latin tranflations, (with notes,) of Dion Caffius, Plutarch, Strabo, and Cedrenus. His life was prematurely terminated in confequence of hard ftudy, in 1576, at the age of 44 years. Moreri.

XYLARIA, in *Botany*, from ξυλον, *wood*, a name given by fome cryptogamic botanifts to the firft fection of the genus SPHÆRIA in Perfoon. (See that article.) The idea appears to have been fuggefted by the old name of *Hypoxylon*, belonging to one of the fpecies. But it may alfo apply to the woody and durable texture of that and fome others of the fame fection.

XYLENOPOLIS, the *Town of the Woods*, in *Ancient Geography*, a town of India, at one of the mouths of the river Indus, according to Pliny, who reports that it was built by Alexander. M. D'Anville thinks that this town is the fame with Hyala. It fubfifted in the time of Pliny.

XYLINA, IXIL, a town of Afia, in the Colchide, and country of the Lazii. It was fituated on the right bank of the Acinafis, near its mouth in the Euxine fea, north of Chordyla.

XYLINE, a town of Cappadocia, in Cappadocian Pontus. Ptol.

XYLINES, a people of Africa, in Libya interior, E. of the Agangines, from the foot of mount Arvalle, as far as mount Arangas. Ptol.

XYLO-ALOE, compounded of ξυλον, *wood*, αλον, *aloes*, in *Medicine*, the lignum aloes; called alfo *agallochum*. See ALOE, and CALAMBAC.

XYLO-BALSAMUM, ξυλοβαλσαμον, compounded of ξυλον, *wood*, and βαλσαμον, *balfam*, a name which naturalifts, &c. give to the wood of the tree, which yields that precious gum known to the Latins by the name of *opobalfamum*, and, among us, by the name of *balfam*, or *balm of Gilead*.

We have branches of this tree brought from Cairo. They are very ftraight, brittle, unequal, and full of knots; their bark is reddifh without, and greenifh within. The wood is whitifh, and full of pith; and, when broken,

broken, yields an agreeable ſmell, reſembling that of the balſam.

The *xylo-balſamum* is reputed good to ſtrengthen the brain and ſtomach, and to expel poiſon.

XYLOCARACTA, or XYLOCRACTE, in the *Materia Medica*, a name by which ſome authors have called the carob, or ſiliqua dulcis, the ſweet pipe-tree.

This was called by ſome of the Greek writers *xyloceraton*, the tree bearing pods, and from a corruption of this name the other has been formed.

XYLOCARPASUM, in *Natural Hiſtory*, a name given by ſome authors to a poiſonous kind of wood.

It was the wood of that tree whoſe gum was called *carpaſum* and *opocarpaſum*.

XYLOCARPUS, in *Botany*, from ξυλον, *wood*, and καρπος, *fruit*, alluding to the woody texture of the ſeed-veſſel.—"Koenig in Naturf. v. 20. 2." Schreb. Gen. 253. Willd. Sp. Pl. v. 2. 329. Mart. Mill. Dict. v. 4. Poiret in Lamarck Dict. v. 8. 806.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Tribilatæ*, Linn. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, club-ſhaped, coriaceous, ſomewhat coloured, with four roundiſh teeth. *Cor.* Petals four, ovate-oblong, rather coriaceous, widely ſpreading, twice the length of the calyx. Nectary erect, ovate, inflated, ſomewhat fleſhy, with eight marginal ſegments. *Stam.* Filaments no other than the eight ſegments of the nectary, linear, obtuſe, emarginate, ſhorter than the petals; anthers eight, attached to the inner ſide of the filaments, and of the ſame length, linear-oblong, abrupt. *Piſt.* Germen ſuperior, ovate, ſmooth, ſlightly rugged at the baſe; ſtyle very ſhort and thick; ſtigma abrupt, broad, bordered, its margin furrowed, its diſk furrowed croſſwiſe, and perforated. *Peric.* Drupa large, globoſe, dry, with a thick coat; externally ſmooth, marked with four or five furrows; internally woody and fibrous. *Seeds.* Nuts eight, ten, or more, angular, unequal, irregular; their outer ſkin ſoft, and rather ſilky; inner woody and fibrous; kernel in ſome degree woody, brittle, with a prominent embryo.

Eſſ. Ch. Calyx oblong, with four teeth. Petals four. Nectary inflated, with eight teeth bearing the anthers. Drupa ſuperior, dry, woody, with four or five furrows. Nuts numerous, angular, irregular.

1. X. *Granatum.* Indian Wooden-pomegranate. Koenig as above. Willd. n. 1. (Granatum littoreum; Rumph. Amboyn. v. 3. 92. t. 61. *Cadul gaha* of the natives of Ceylon. *Candalanga* in the Tamul language.)—Native of muddy thickets on the ſea-ſhores of Amboyna, Ceylon, and other parts of the Eaſt Indies, among *Rhizophora* trees, flowering in November, and bearing fruit in January and February. A *tree* varying greatly in ſize, ſometimes little more than a ſhrub; its wood elegantly veined, but ſo twiſted and knotty, that no large handſome pieces can be procured. The *trunk* is erect, with a hard, deeply cracked bark; the *head* denſe, roundiſh, or oblong. Larger *branches* ſcattered; ſmaller generally oppoſite, numerous, clothed with a greyiſh bark. *Leaves* oppoſite, ſtalked, ſpreading, oblong, obovate, or elliptical, acute, entire, rather larger than thoſe of an apple-tree; dark-green, ſmooth and ſhining on the upper ſide; veiny beneath, with a prominent midrib. *Footſtalks* ſhort, roundiſh, ſpreading, a little curved, rugged, of a cheſnut-brown. *Cluſters* ſcattered or axillary, ſtalked, rather ſpreading, ſhorter than the leaves; their ſubdiviſions oppoſite, or three-forked, with round, ſmooth, red, tough, naked ſtalks; the ultimate ones ſhorter than the *flowers*, which are ſmall, yellowiſh, or dirty white. Their *nectary* ſomewhat reſembles a Lily of the Valley, but theſe flowers have no ſmell. The *fruit* is larger than a pomegranate, ſometimes the ſize of a child's head of three years old, and contains from eight or ten to twenty angular unequal nuts, bigger than cheſnuts, which do not appear to be uſed as food. There is a very remarkable diſproportion between the magnitude of the *flowers* and *fruit*. Rumphius, from whom, as well as from Koenig, we take our deſcription, hints that the *flowers* are perhaps dioecious. It is certain that moſt of thoſe, ſo numerous in each cluſter, muſt be abortive, or there would not be room to perfect the *fruit*.

XYLOCASIA. See CASSIA.

XYLOCOCCUM, in the *Materia Medica*, a name given by ſome of the later Greek writers to the carob-tree, or ſiliqua dulcis.

XYLOCOLLA, a word uſed by ſome of the ancient writers to expreſs what was more uſually called *taurocolla*, glue made of the ears and genitals of a bull.

XYLOCOPIA, Ξυλοκοπια, among the Greeks, a puniſhment with a cudgel. See FUSTIGATION.

XYLODON, in *Botany*, from ξυλον, *wood*, and οδον, *a tooth*, an appellation given by Perſoon to the third ſection of his genus SISTOTREMA, Syn. Fung. 550. (See that article.) The *lamellæ* of that genus, (which is intermediate, as he juſtly ſays, between *Boletus* and *Hydnum*, though, in our opinion, moſt akin to the latter,) are of a firm, woody, and durable nature, and divided into many compreſſed irregular teeth.

XYLOGLYCON, a name given to the carob, or ſiliqua dulcis, by ſome of the old Greek writers.

The word expreſſes a ſweet or ſweet-fruited tree.

XYLOIDES, or HYLOIDES, a term uſed by many of the ancient writers to diſtinguiſh thoſe plants which had woody ſtalks, though they never grew up to any conſiderable ſize; ſuch as the garden-thyme, marjoram, and the like.

XYLOMA, ſo called from the firm or woody ſubſtance of the whole fungus, and the jagged or radiating margin of one of the moſt common ſpecies, *X. acerinum;* the word being apparently compoſed of ξυλον, *wood*, and λωμα, *a fringe*, or *border*.—Perſ. Syn. Fung. 103. Obſ. Mycol. v. 2. 100. —Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi Angiocarpi*.

Eſſ. Ch. Flat, nearly orbicular. Receptacle various, hard, ſomewhat fleſhy internally; either remaining cloſed, or burſting unequally.

Sect. 1. *Compound. Several receptacles combined. Rather large.*

1. X. *ſalicinum.* Sallow-leaf Xyloma. Perſ. n. 1. "Diſp. Meth. 5. t. 2. f. 4."—Thick, tuberculated; internally cartilaginous, and white at the baſe.—Frequent on the leaves of *Salix caprea*. This, according to Perſoon, is generally cloſed, but he has found it in the ſpring, as delineated in the work quoted, breaking, in the upper part, into ſeveral portions, like the ſhell of a tortoiſe, from whoſe interſtices the fine powdery *ſeeds* flew off like ſmoke. The breadth of the whole fungus is about half an inch; its colour black.

2. X. *andromedæ.* Marſh-roſemary Xyloma. Perſ. n. 2. —"Oblong, thickiſh, with rib-like elevations, poliſhed."—Found in ſummer on the leaves of *Andromeda polifolia*, which hence appear as if pitch had been dropped upon them. Sometimes each fungus is as long as the whole leaf; ſometimes only half as long. Its thickneſs is conſiderable with regard to the ſize. The lower *ſtratum* is white and firm, as in the foregoing.

3. X. *acerinum.* Maple Xyloma. Perſ. n. 3. (Sphæria maculiformis; Ehrh. Crypt. n. 219. Beitr. v. 7. 101.)—Dilated, ſomewhat orbicular, thin, flat, black, ſlightly corrugated towards the centre.—Frequent on the leaves of

Acer

Acer platanoides, and *A. campeſtre*, in the autumn. It conſiſts of numerous, black, opaque, inſeparable patches, ſcattered over the upper ſide of the leaf, each about a quarter or one-third of an inch in diameter; the margin ſometimes variouſly and elegantly notched, or fringed, and always circumſcribed by a very ſtriking yellow, or tawny, diſcoloration of the leaf. Perſoon ſays he has obſerved the ſurface of this ſpecies, though uſually almoſt even and uniform, cracking into waved bordered fiſſures. We can ſee ſomething of this in a ſpecimen from profeſſor Schrader.

4. X. *punctatum*. Sycamore Xyloma. Perſ. n. 4. Obſ. Mycol. v. 2. 100. — Dilated, thin, imperfectly orbicular, ſomewhat convex, black. Receptacles unequal, aggregate, parallel, oblong, blunt, ſuperficial.—Frequent on the fading or fallen leaves of *Acer Pſeudoplatanus*, which are rarely without this paraſite in autumn and winter. The patches are from half an inch to an inch wide, cloſely united with the leaf, ſlightly convex above, and rather concave at the under ſide, which is ſomewhat blackened by them, eſpecially at the circumference of each. The wrinkles, or *receptacles*, are ſhaped like the clefts of an OPEGRAPHA (ſee that article); but much more ſhallow, as well as more uniform in colour.

5. X. *ſtellare*. Starry Xyloma. Perſ. n. 5. Obſ. Mycol. v. 2. 100.—" Thin, pitchy; the margin fringed with radiating fibres."—Found by Perſoon, on the leaves of *Phyteuma ſpicatum*, though rarely. About half an inch broad, more or leſs, of a handſome appearance, with an uniform ſmooth diſk, very black; the marginal fringe either black, or greyiſh. No diſtinct *receptacles* have yet been noticed.

6. X.? *rubrum*. Red Xyloma. Perſ. n. 6. Obſ. Mycol. v. 2. 101.—" Aggregate, orbicular, ſomewhat confluent, red."—Generally found in autumn on the leaves of *Prunus domeſtica*, rarely on *P. ſpinoſa*. At firſt ſight the red colour of this ſpecies, all the others being black, cauſes it to be taken for an *Œcidium*, or *Uredo*; but on examination the internal ſubſtance proves to be ſolid, uniform, ſcarcely containing diſtinct *receptacles*, or *ſeed-veſſels*; its genus, however, is reckoned by Mr. Perſoon as very doubtful. The patches are each from two to four lines broad, rather thick, with darker-coloured ſuperficial dots, viſible only with a microſcope. *Perſoon.*

Sect. 2. *Simple. Receptacles ſolitary, ſcattered; generally rounded, like a Peziza: or dot-like. Smaller.*

7. X. *pezizoides*. Cup-like Xyloma. Perſ. n. 7. (Peziza comitialis; Sowerb. Fung. t. 118. P. viridis; Bolt. Fung. t. 109. f. 1.)—Rather crowded, orbicular, black; opening at length, with an upright, ſomewhat crenate, border, and a pale olive or greeniſh diſk.—Found on fallen leaves of oak in December; more rarely, and in leſs perfection, on thoſe of beech. The ſpecimens are pretty uniform in ſize, larger than muſtard-ſeed, cloſely attached to the ſurface of the leaf; the border of each ſometimes pale, ſometimes black, unleſs Sowerby and Bolton deſcribe two different ſpecies.

8. X. *ſphærioides*. Dot-like Xyloma. Perſ. n. 8.—" Scattered, dot-like, ſoftiſh, with an open diſk, and a collapſed inflexed border."—On the leaves of *Salix caprea*. This at a diſtance reſembles *Sphæria punctiformis*; but under a magnifier it looks like ſome *Peziza*, with a criſped margin. The outſide is black; the diſk, rarely all diſplayed, is paler.

9. X. *hyſterioides*. Oblong Xyloma. Perſ. n. 9. " Ic. et Deſcr. Fung. t. 10. f. 3, 4."—" Elliptical, ſhining, ranged nearly parallel."—On the fallen leaves of Hawthorn, in the ſpring. Each plant is one-third of a line long, ovate, or elliptical, of a ſhining black; ſolid within. A longitudinal line ſeems to mark the place where it finally burſts.

10. X. *ſalignum*. Willow Xyloma. Perſ. n. 10. (" Sphæria ſaligna; Ehrh. Crypt. n. 299.")—" Aggregate and rather crowded, orbicular, thin, with a ſomewhat convex diſk."—On the leaves of *Salix caprea*, occupying nearly their whole ſurface. Each individual is from one-third to one-half a line broad.

11. X. *populinum*. Aſpen Xyloma. Perſ. n. 11.—" Aggregate, flattened, variouſly ſhaped, ſmooth, opaque, black." —Found on the old leaves of *Populus tremula*, in the ſpring. About a line broad; the diſk here and there greyiſh.

12. X. *concentricum*. Concentric Xyloma. Perſ. n. 12. Obſ. Mycol. v. 2. 101.—" Simple. Receptacles ſmall, orbicular, depreſſed, ſomewhat conical, concentrical, of a ſooty grey."—On half-decayed leaves of *Populus tremula*, forming circular patches, near an inch broad. *Receptacles* like ſmall ſcattered dots, at firſt black, afterwards ſooty or greyiſh, burſting finally at the ſummit.

13. X. *fagineum*. Beech Xyloma. Perſ. n. 13. " Diſp. Meth. Fung. 52."—" Minute, crowded, of a ſhining black, orbicular, plaited, a little depreſſed."—Found on the under ſide of fallen and dried leaves of Beech, in the form of crowded black dots.

14. X. *alneum*. Alder Xyloma. Perſ. n. 14.—" Minute, ſcattered, roundiſh, plaited." — This ſpecies is met with in ſummer, upon Alder-leaves, while they are ſtill green. It conſiſts of a few black diſtant dots.

Theſe minute productions are neceſſarily very obſcure in their characters and economy. The preſent genus is marked by its internal ſolidity, of a corky or woody ſubſtance, having nothing of a gelatinous nature, nor are there any diſtinct round capſular receptacles, as in SPHÆRIA. See that article.

XYLOMELUM, ſo called by the writer of this, from ξυλον, *wood*, and μηλον, *an apple*, in alluſion to the hardneſs and form of the fruit, which procured it, when firſt diſcovered, the appellation of the wooden pear.—Sm. Tr. of Linn. Soc. v. 4. 214. Mart. Mill. Dict. v. 4. Brown Prodr. Nov. Holl. v. 1. 387. Tr. of Linn. Soc. v. 10. 189. Ait. Hort. Kew. v. 1. 212.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Cal.* none. *Cor.* Petals four, regular, equal, linear; externally hairy; a little dilated and concave at the tip; revolute ſoon after expanſion. Nectary four glands at the baſe of the germen. *Stam.* Filaments four, very ſhort, inſerted rather above the middle of each petal, and becoming prominent by its recurvation; anthers linear, inflexed, of two lateral parallel lobes, with a membranous edge; imperfect in ſome of the flowers. *Piſt.* Germen ſuperior, roundiſh; ſtyle erect, rigid, the length of the petals, deciduous; ſtigma vertical, club-ſhaped, obtuſe, often ſmall and abortive. *Peric.* Follicle woody, very thick, ovate, of one excentric ſmall cell, and burſting into two divaricated half valves, at the point. *Seeds* two, roundiſh, compreſſed, each with a terminal, oblong, rather oblique, membranous wing, as long as the follicle.

Eſſ. Ch. Petals four, bearing the petals above the middle, regular, revolute. Nectariferous glands four. Stigma club-ſhaped. Style deciduous. Follicle woody, of one excentric cell, with two winged ſeeds.

1. X. *pyriforme*. Wooden-pear. Brown n. 1. (Bankſia pyriformis; Gærtn. v. 1. 220. t. 47. f. 1. Lamarck Illuſtr. v. 1. 242. t. 54. f. 4. White's Voyage 224. t. 21. Hakea pyriformis; Cavan. Ic. v. 6. 25. t. 536.)—Gathered on the eaſtern coaſt of New Holland, near Port Jackſon, by the firſt ſettlers in that colony. We received ſpecimens from Dr. White,

Dr. White, in 1789 and 1793. Mr. Brown fays it grows on ftony hilly ground. This, the only known fpecies, is a tree, with oppofite branches; downy and rufty when young. *Leaves* oppofite, ftalked, five inches long, lanceolate, acute at each end, entire, rather coriaceous, fmooth, with one rib, and many prominent reticulated veins; pale and yellowifh beneath; clothed, when they firft come out, with denfe, deciduous, rufty down: thofe of young plants, according to Mr. Brown, are toothed. *Footftalks* flattifh, an inch long, fmooth. *Stipulas* none. *Spikes* axillary, oppofite, catkin-like, cylindrical, denfe, much fhorter than the leaves, many-flowered, fhaggy with rufty down. *Flowers* feffile, hardly an inch long, in pairs, each pair accompanied with one fmall downy *bractea*; all of them abortive, except the lowermoft, fo that from fpecimens feen in fruit only, the flowers were judged to be folitary. The *fruit* is ovate, or inverfely pear-fhaped, very hard, even, downy, two or three inches in length. *Seeds* and their wings brown. Mr. Brown remarks, that the greater part of the *flowers*, having a fmall *ftigma*, and no *germen*, are neceffarily abortive. Many of the *anthers* too have, as above-mentioned, an imperfect appearance; but having never feen living flowers, we cannot tell whether this be an original defect, or merely owing to their having long ago performed their office. It is poffible that the rufty hue of the flowers and young leaves, fo rich and beautiful in our fpecimens, may partly, if not altogether, be owing to drying. This plant, though procured for Kew garden, by fir Jofeph Banks, in 1789, appears never yet to have bloffomed there.

XYLON, is fo well defcribed by Pliny, book 19. chap. 1, as to leave no doubt of its being our Cotton. (See Gossypium.) He fays it ferved to make the choiceft garments of the Egyptian priefts. Dr. J. R. Forfter, the famous botanift and circumnavigator, publifhed in 1776 a moft learned little volume, to prove Cotton the true *Byffus* of the ancients. See alfo Matth. Valgr. v. 1. 376.

Xylon, Ξυλον, among the Athenians, a punifhment inflicted, by putting the offender into the ftocks.

XYLOPHYLLA, in *Botany*, very expreffively named by Linnæus, after Rumphius, from ξυλον, *wood*, and φυλλον, *a leaf*, in allufion to the hardnefs and rigidity of its foliage, which indeed ferves the purpofe of both leaves and flower-ftalks.—Linn. Mant. 147. Schreb. Gen. 200. Willd. Sp. Pl. v. 1. 1500. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 336. Juff. 387. Poiret in Lamarck Dict. v. 8. 812. Lamarck Illuftr. t. 855. Gærtn. t. 108. (Phyllanthus; Browne Jam. 188.)—Clafs and order, *Monoecia Monadelphia*. (Pentandria Trigynia; *Browne, Linn. Schreb. Willd.*) Nat. Ord. *Tricoccæ*, Linn. *Euphorbiæ*, Juff.

Gen. Ch. Male, *Cal.* Perianth in fix deep regular fegments; the three innermoft largeft. *Cor.* Petals none, unlefs the calyx, or its inner fegments, be taken for fuch. Nectary of fix globular glands. *Stam.* Filaments united into a very fhort column; anthers three or fix, roundifh; two-lobed.

Female, on the fame plant, and in the fame fituation, as the male. *Cal.* and Nectary as in the male. *Pift.* Germen fuperior, feffile, roundifh; ftyles three, fhort, fpreading; ftigmas three-cleft. *Peric.* Capfule roundifh, with three furrows, three cells, and fix elaftic valves. *Seeds* two in each cell, roundifh.

Eff. Ch. Male, Calyx in fix deep fegments; three of them interior. Petals none. Nectary of fix globofe glands.

Female, Calyx and Nectary like the male. Styles three. Stigmas three-cleft. Capfule of three cells, with fix elaftic valves. Seeds two in each cell.

Obf. Dr. Sims, in Curt. Mag. 1021, has juftly indicated this genus as too near Phyllanthus (fee that article); where the *feeds* are erroneoufly faid to be folitary. Whether the difference between their *nectaries* be permanent, we have not feen enough to determine. At any rate, thefe two genera muft ftand next to each other, in the Linnæan artificial fyftem, as well as in every natural one.

1. X.? *longifolia*. Long-leaved Sea-fide Laurel. Linn. Mant. 221. Willd. n. 1. Swartz Obf. 112. (Xylophyllos ceramica; Rumph. Amboyn. v. 7. 19. t. 12.)—Leaves linear, alternately toothed. Flowers folitary at each tooth.—Found only on the lofty, ftony, cold mountains of the ifland of Ceram. The *trunk* is fhrubby, fcarcely fo thick as a man's arm, dividing above it into many round *branches*, as thick as the finger. Thefe end in numerous, alternate, drooping, long, linear, acute *leaves*, or perhaps winged branches, with blunt alternate teeth, ufually an inch diftant from each other. The *flowers* are folitary, nearly feffile, at each notch. Of their ftructure nothing is known; nor of the *fruit*, except what Rumphius relates, and this, as Dr. Swartz obferves, does not agree with the genus before us, Linnæus having merely adopted this remarkable plant as a *Xylophylla*, on account of its habit, which is ftriking enough. Rumphius fays, "the *calyx* refembles a fmall clove, and is red, bearing a roundifh-oblong *fruit*, refembling a Bay-berry, or the *Abrus* of Alpinus, (and Linnæus,) green, hard, with a fmall point. When opened, a fmall *nucleus* is found, refembling a grain of rice, fixed on the ftalk, and tafting fweet, like a Filberd, being enclofed in a white fkin." It is very unlikely that the kernel of any fpecies of this genus fhould be eatable.

2. X. *latifolia*. Broad-leaved Sea-fide Laurel. Linn. Mant. 221, excluding the fynonym. Willd. n. 2. Ait. n. 1. Swartz Obf. 113. Curt. Mag. t. 1021. (Genefiphylla afplenifolia; L'Herit. Sert. Angl. t. 39. Phyllanthus n. 1. Browne Jam. 188. Hemionitidi affinis, americana epiphyllanthos, &c.; Pluk. Phyt. t. 36. f. 7.)—Leaves rhomboid, crenate; notches crowded, each bearing one or more ftalked flowers.—Native of lime-ftone rocks, near the fea-fide, in the Weft Indies. Mr. Waller is recorded in Hort. Kew. as having firft fent this elegant and fingular fhrub to his friends in England, in 1783. If we miftake not, the marquis of Rockingham, who died in 1782, received it from Mr. Waller fome time before; the original having been long one of the dowager marchionefs's fineft plants. It flowers in a ftove copioufly in Auguft and September. The *ftem* is four or five feet high, with a round bufhy head. *Leaves* a foot long, alternate, ftalked, alternately pinnate; *leaflets* twelve or more, nearly feffile, one and a half or two inches long, ovate-rhomboid, acute, hard and rigid, erect, ftriated, fmooth; entire towards the bafe. *Flowers* copious, fmall, green, on fimple crimfon ftalks; thofe of the female flowers much the longeft. Both *ftamens* and *piftil* fometimes occur in the fame flower, according to Dr. Swartz.

3. X. *Arbufcula*. Lanceolate-leaved Sea-fide Laurel. Swartz Prodr. 28. Willd. n. 3. (Phyllanthus fpeciofa; Jacq. Coll. v. 2. 360. Ic. Rar. t. 616. Swartz Ind. Occ. 1107. Schneev. Ic. t. 30?)—Leaves pinnate, lanceolate, pointed, crenate; notches crowded, each bearing one or more ftalked flowers.—Native of the floping fides of lofty mountains, in the fouth part of Jamaica. *Swartz.* We can difcern no real fpecific difference between this and the laft. The *leaves* indeed are narrower, more elongated and lefs falcate, but thofe characters vary. Dr. Swartz

lays

lays a ftrefs on the *flowers* being polygamous in *latifolia*, monoecious in *Arbufcula;* but nothing is more variable than this circumftance. It is difficult to fay which of the two Schneevoght's figure reprefents.

4. X. *falcata.* Sickle-leaved Sea-fide Laurel. Swartz Prodr. 28. Willd. n. 4. Ait. n. 2. Andr. Repof. t. 331. (Phyllanthus Epiphyllanthus; Linn. Sp. Pl. 1392. Ph. americana planta, flores e fingulis foliorum crenis proferens; Comm. Hort. v. 1. 199. t. 102.)—Leaves fcattered, linear-lanceolate, fomewhat falcate, diftantly toothed. Flowers nearly feffile, many together at each tooth.—Native of the Bahama iflands. Cultivated for above 120 years paft in the ftoves of England and Holland, flowering in July and Auguft. The *ftem* is five or fix feet high, fhrubby, with round *branches*. *Leaves* not pinnate, with a flat ftalk, as in the two laft, but fcattered irregularly over the branches, each proceeding from a fcaly bud, fimple, five or fix inches long, one-third of an inch wide, rigid, ftriated, tapering at each end; entire towards the bafe; alternately toothed in the upper part, the teeth an inch or more afunder. *Flowers* crimfon, on fhort ftalks, fome male and fome female in each tuft; the latter feweft.

5. X. *anguftifolia.* Narrow-leaved Sea-fide Laurel. Swartz Prodr. 28. Willd. n. 5. Ait. n. 3. (X. elongata; Jacq. Hort. Schœnbr. v. 3. 53. t. 348. Poiret n. 7. Phyllanthus n. 2; Browne Jam. 188. Ph. americana, anguftiori et longiori folio, ramofa, caulefcens; Pluk. Phyt. t. 247. f. 4. Ph. anguftifolia; Swartz Ind. Occ. 1111.)—Leaves pinnate, linear-lanceolate, rather diftantly toothed, fcarcely curved. Flowers on fhort ftalks, polygamous, one or more from each tooth.—Native of ftony rocky fituations, in the weftern part of Jamaica. *Swartz.* Cultivated in the Englifh ftoves before 1789, flowering in July and Auguft. *Aiton.* This agrees with our fecond and third fpecies, in having feveral alternate *leaflets*, on a flat or channelled, bordered *common ftalk;* but fcarcely half fo many on each ftalk as in thofe; and of a longer narrower form, not copioufly crenate, but fparingly and rather diftantly toothed, more in the manner of *X. falcata.* The *ftem* is only two feet high. The *flowers* are lefs copious than in the laft-mentioned fpecies, and, according to Dr. Swartz, there are fome perfect, intermixed with the male and female ones. Their colour is red; the male ones paleft. (Jacquin's figure expreffes the contrary.) Plukenet's engraving, fuch as it is, manifeftly agrees with this fpecies, and with no other. Linnæus, no doubt, confounded this, and, at one time, the *latifolia* alfo, with the *falcata.* Browne's fynonyms are fettled by his own fpecies, though unmarked.

6. X. *linearis.* Linear Sea-fide Laurel. (X. anguftifolia β; Swartz Prodr. 28. Willd. n. 5. Phyllanthus linearis; Swartz Ind. Occ. 1113.)—"Leaves pinnate, linear, tapering, pliant, crenate; their common ftalk bordered. Flowers feveral from each notch."—Native of fhady ftony banks of rivers, in the weftern part of Jamaica. *Swartz.* The ftem is fcarcely a foot high, erect, with round branches. Common *footftalks* four or five inches long, fcattered, compreffed, (rather depreffed,) bordered. *Leaves* linear, rather broadeft in the middle; tapering at the bafe; ending in a very long acute point, ftriated, paler beneath, two inches long, of a thinner fubftance than the foregoing fpecies, which circumftance, added to its humbler ftature, and different colour, has induced Dr. Swartz to confider it as diftinct. The *flowers* are white, monoecious, from three to fix at each notch of the leaves, on capillary ftalks, four lines in length.

7. X. *montana.* Mountain Sea-fide Laurel. Swartz Prodr. 28. Willd. n. 6. (Phyllanthus montana; Swartz Ind. Occ. 1117.)—Leaves fomewhat two-ranked, elliptic-lanceolate, coriaceous, deeply crenate. Flowers nearly feffile, many from each notch. Branches round; two-edged at the extremity.—Found on lime-ftone rocks, in the weftern part of Jamaica. A *fhrub*, fix feet high, much and irregularly branched; the *branches* often forked, round, nearly erect, with annular fcars; ultimate ones permanent, glaucous-afhcoloured, compreffed and two-edged at the fummit. *Leaves* alternate, imperfectly two-ranked, nearly feffile, either blunt or acute, obliquely ftriated, rigid, brownifh-green, fmooth, with deep many-flowered notches. *Flowers* monoecious; the males eight or ten, pale red; females folitary among the males, deep purple. Clearly diftinguifhable from all the fpecies which it otherwife refembles, by the permanency, and woody texture, of the ultimate branches. *Swartz.*

8. X. *ramiflora.* Siberian Sea-fide Laurel. Ait. Hort. Kew. ed. 1. v. 1. 376. ed. 2. n. 4. Willd. n. 7. (Pharnaceum? fuffruticofum; Pallas It. v. 3. 716. t. E. f. 2.)—Leaves elliptical, ftalked. Flowers axillary.—Native of the defarts of Siberia, from whence it was procured for the Englifh gardens, in 1783, by the late Mr. Bell. It is a hardy fhrub, flowering in July and Auguft. Pallas, who never faw the plant alive, merely gueffed at its genus. By his figure, its habit is altogether that of a *Phyllanthus.* The *ftem* is bufhy, with many ftraight, wand-like, leafy branches, each a fpan long. *Leaves* fcattered, thin, hardly an inch in length, blunt, crenate, or fomewhat wavy. *Flowers* fix or eight together, making a little axillary tuft, accompanied by minute red *ftipulas*, or *bracteas.* Segments of the *calyx* five, concave, white, with a coloured margin. *Anthers* five, thick, obtufe, furrowed at the outfide. *Germen* in the fame flower, as we prefume from Pallas's defcription, very fmall. *Styles* three, thread-fhaped, fimple, the length of the *ftamens.* The genus of this fpecies is, at beft, very doubtful, as Willdenow has already remarked.

Phyllanthus and *Xylophylla* are fo totally different in habit, and the latter is, in this refpect, fo very peculiar, that a clear character between them is much to be defired. The true *Xylophyllæ* are all of Weft Indian origin. The tropical *Phyllanthi* are natives of the Eaft Indies; a few hardy fpecies grow in North America.

Xylophylla, in *Gardening*, contains plants of the tender exotic kind for the ftove, in which the fpecies cultivated are, the long-leaved love flower (X. longifolia), the broad-leaved love flower (X. latifolia), and the falcated love flower (X. falcata).

The firft is a branching angular plant, but the fecond has round branches; and the laft is woody in the ftems and branches.

Method of Culture.—Thefe plants are increafed by fowing the feeds in pots in the early fpring, and plunging them in a hot-bed: when the plants are come up two or three inches in growth, they fhould be pricked out in feparate pots, replunging them in the bark-bed: they may afterwards be managed as other ftove-plants of a fimilar growth.

They are alfo, fome of them, capable of being raifed by off-fets, flips, and cuttings, affifted by a hot-bed in the fame manner.

They require the conftant protection of the ftove in winter, but in the hot fummer months may be fet out in their pots in a fheltered fituation, being taken in on the approach of cold nights.

They afford variety, and are curious in ftove collections among other plants of fimilar growths.

XYLOPIA, in *Botany*, altered by Linnæus from *Xylopicrum* of Browne, a name which the latter took from Plukenet, whose *Xylopicron*, formed from ξυλον and πικρος, alludes to the bitternefs of the wood. M. De Candolle, in following Linnæus, obferves, that this abbreviation entirely deftroys the fenfe. It certainly does to thofe who do not trace out the fource of the word. If the original had been conftructed in the moft unexceptionable manner, we might have hazarded its reftoration; but *Xylopia* is now too firmly eftablifhed to be lightly difturbed, and in found nothing can be better.—Linn. Gen. 469. Schreb. 375. Willd. Sp. Pl. v. 2. 1270. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 3. 336. Juff. 284. De Cand. Syft. v. 1. 499. Poiret in Lamarck Dict. v. 8. 810. Lamarck Illuftr. t. 495. Gærtn. t. 69. (Xylopicron; Pluk. Almagr. 395. Xylopicrum; Browne Jam. 250.)—Clafs and order, *Polyandria Polygynia.* (Gynandria Polyandria, *Linn.*) Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juff. *Anonaceæ*, De Candolle.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in from three to five deep, broad, ovate, coriaceous, rather acute, permanent fegments. *Cor.* Petals fix, feffile, linear-lanceolate, coriaceous, much longer than the calyx; the three outermoft largeft. *Stam.* Filaments none; anthers numerous, oblong, quadrangular, abrupt, parallel, crowded, feated on the tumid, nearly globofe, receptacle, in feveral rows. *Pift.* Germens feveral, on fhort ftalks, compreffed; ftyles tapering, crowded together; ftigmas fimple. *Peric.* Capfules feveral, ftalked, coriaceous, compreffed, bluntly angular, of one cell and two valves, burfting at the top. *Seeds* one or two, obovate, polifhed, tunicated at the bafe.

Eff. Ch. Calyx lobed, coriaceous. Petals fix; the three outermoft largeft. Capfules ftalked, angular, compreffed, of two valves. Seeds one or two, tunicated.

The plants compofing this genus are trees or fhrubs, with oblong or lanceolate (entire) *leaves*, and axillary, bracteated, fimple or divided *flower-ftalks*. The *wood* is bitter; *bark* and *fruit* aromatic. *De Candolle*, who defcribes eight fpecies, of which the firft is ftill the leaft underftood.

Linnæus, by a mifapprehenfion of the true character of his own clafs of GYNANDRIA, (fee that article,) has placed this genus far afunder from *Anona*, *Uvaria*, &c., to which it is clofely allied, both in natural and artificial diftinctions. Few genera have hitherto been lefs underftood.

1. X. *muricata.* Rough-fruited Bitter-wood. Linn. Sp. Pl. 1367. Willd. n. 1. De Cand. n. 1. Ait. n. 1. (X. frutefcens; Gærtn. v. 1. 339. t. 69, excluding the fynonym of Aublet. Xylopicrum n. 1; Browne Jam. 250. t. 5. f. 2.)—Leaves ovato-lanceolate, pointed; clothed with clofe-preffed hairs beneath. Branches zigzag, nearly fmooth. Stalks with feveral flowers. Fruit muricated.—Found by Dr. Patrick Browne, at the foot of the mountains, in Sixteen-mile walk, Jamaica. His fpecimen, drawn in the plate above-cited, is in our hands, but ftripped of the leaves. This deficiency is fupplied by another very large and perfect one, gathered in Jamaica, by Mr. Maffon. The latter M. De Candolle unfortunately did not fee, when the writer of this was favoured with too fhort a vifit from this learned and amiable man. It is become neceffary to correct fome errors in the defcription, whofe fource is unknown to us. The leaves are certainly not "bearded at the point," nor do we perceive in what fenfe they are termed "ftrigofe beneath." Thefe are Willdenow's expreffions, adopted by De Candolle. Sir Jofeph Banks fent a living plant of this fpecies to Kew garden, in 1793; but if it furvives, it has not yet flowered. This is a fmall *tree*, fifteen or twenty feet high, with alternate, round *branches*, zigzag when young, quite fmooth, except towards the very extremity, which is flightly filky. *Leaves* alternate, on fhort thick ftalks, fpreading, rather ovate than lanceolate, with a blunt or emarginate, fmooth point; their length two inches, or a little more; their margin entire, flightly revolute; their upper furface fmooth and fhining, reticulated with veins; under paler, more opaque, clothed with fine, fcattered, clofe, filky hairs, after a while deciduous: mid-rib ftout, rough with minute tubercles at the back. *Flower-ftalks* copious, axillary, folitary, fhort, knotty, bearing from two to five *flowers*. *Calyx* three-lobed, fcarcely downy. *Petals* half an inch long, denfely filky on both fides; the three innermoft very narrow, triangular-awlfhaped. *Capfules*, by Gærtner's account, which in the main agrees with that of Linnæus, nearly ovate, but angular and compreffed, fometimes as many as fifteen, coriaceous, covered with little points, of one cell and two valves, containing one or two oval *feeds*, each with a cup-like tunic at the bottom. Browne made no remarks on the bark or wood of this tree. We perceive little bitternefs in either, though fome aromatic flavour in the bark. This fpecies being the type of its genus, we have thought a full defcription requifite.

2. X. *frutefcens.* Shrubby Silky Bitter-wood. Aubl. Guian. 602. t. 242, excluding the fynonyms of Linnæus and Browne. Willd. n. 2. De Cand. n. 2. "Dunal Monogr. 120." Lamarck t. 495, copied from Aublet, excluding the fruit, which is Gærtner's figure of the foregoing. Poiret n. 2. (X. fetofa; Poiret n. 4, according to De Candolle. Embira feu Pindaiba; Pif. Braf. 71. Ibira; Marcgr. Braf. 99.)—Leaves lanceolate, pointed; glaucous and filky beneath. Branches filky. Stalks with few flowers. Capfules fmooth.—Found by Marcgraf in Brafil, flowering in February; by Aublet in Cayenne and Guiana, bearing flowers and fruit in Auguft. M. De Candolle has examined a fpecimen, and we, having feen none, are obliged to rely on him and the other authors here cited for the fpecific diftinctions between this and the firft fpecies. The fmoothnefs of the *fruit*, the filkinefs of the *branches*, and narrownefs of the *leaves*, appear fufficient to afcertain the prefent plant. Marcgraf fays the bark affords a tough kind of cordage. The *fruit*, equal in fize to hazel-nuts, is aromatic and acrid, ferving, when powdered, inftead of pepper.

3. X. *falicifolia.* Willow-leaved Bitter-wood. "Humb. and Bonpl. unpublifhed. Dunal Monogr. 121. t. 17." De Cand. n. 3.—"Leaves oblong, with a bluntifh point; filky beneath. Stalks fhort, fingle-flowered? with fmall bracteas."—Found by the celebrated travellers baron Humboldt and M. Bonpland, near Efpinal, in South America. A *tree* with blackifh *branches*, marked with white dots. *Leaves* narrow, an inch and a half or two inches long, three or four lines broad, on fhort ftalks, fingle-ribbed, without veins; fmooth and green above; villous beneath, with clofe-preffed, filky hairs, of a rufous grey. *Capfules* from five to feven, gibbous, flightly pointed, not burfting. *Seeds* one or two. *De Cand.*

4. X. *liguftrifolia.* Privet-leaved Bitter-wood. "Dunal Monogr. 121. t. 18." De Cand. n. 4.—"Leaves oblong, rather acute, fmooth on both fides. Stalks fhort, with few flowers, and fmall bracteas."—Gathered by Humboldt and Bonpland, at Buga, in South America. The *branches* are round, blackifh, rugged, rough with whitifh points. *Leaves* an inch and a half long, four lines broad, on very fhort ftalks, fingle-ribbed, veinlefs; fomewhat fhining above; paler beneath; the young ones filky at the under fide. *Stalks* axillary, with three or four flowers, and roundifh con-

cave *bracteas*. *Calyx* ſmall, three-cleft. Three outer *petals* longeſt, ſpreading at the points. *Capſules* corrugated, not burſting. *Seeds* one or two. *Dunal*. *De Cand.*

5. X. *glabra*. Smooth Bitter-wood. Linn. Sp. Pl. 1367. Willd. n. 3. De Cand. n. 4. " Dunal Monogr. 121. t. 19." Lunan Hort. Jam. 97. (Xylopicrum n. 2; Browne Jam. 251. Xylopicron arbor, barbadenſibus *Bitter-wood;* Pluk. Phyt. t. 238. f. 4.)—Leaves ovate-oblong, pointed, quite ſmooth on both ſides. Stalks ſingle-flowered, ſolitary or in pairs. Fruit ſmooth.—Brought from Barbadoes by Mr. James Reede, who was ſent to the Weſt Indies by the earl of Portland, to procure plants for the royal garden at Hampton-Court. *Plukenet*. This ſpecies, therefore, may have been alive in England. Dr. Patrick Browne met with it in the mountains, at the back of Bull-bay, in Jamaica, where it grew to a conſiderable ſize, being fifty or ſixty feet high. He never ſaw the flowers in perfection. " The wood, bark, and berries," ſays this author, " have an agreeable bitter taſte, not unlike that of the orange-ſeed; and would probably prove excellent medicines. Wild pigeons feed much upon the berries, and owe their delicate bitteriſh flavour to this food. I have eaten many of the berries juſt off the tree, and found them agreeable to the palate, and grateful to the ſtomach. The bark and wood are agreeably bitter while freſh, but that delicacy diminiſhes greatly after they are dried. The wood is eaſily wrought, and good timber, but muſt not be expoſed to the weather." *Browne*. Mr. Lunan, in his *Hortus Jamaicenſis*, adds nothing to this account, but carefully diſtinguiſhes this Bitter-wood from QUASSIA, (ſee that article,) with which ſome perſons have confounded it. M. De Candolle obſerves, that the *branches* of *X. glabra* are round, ſmooth, ſcarcely dotted; and that even the young *leaves* are ſmooth on both ſides: the full-grown ones are two inches long, and one broad, obtuſe with a point. *Calyx* ſmooth, with three very obtuſe lobes. Unexpanded *petals* oblong, clothed externally with cloſe-preſſed pubeſcence, their length four lines. Plukenet repreſents the *flower-ſtalks* ſolitary, oppoſite to each leaf.

6. X. *nitida*. Shining-leaved Bitter-wood. " Dunal Monogr. 122. t. 20." De Cand. n. 6.—" Leaves oblong-lanceolate, ſmooth; poliſhed on the upper ſide. Stalks branched, many-flowered. Calyx nearly entire."—Found by Joſeph Martin, on the Oyac mountains of Cayenne, ſloping down to the ſea. A *tree* of a middling ſize, with ſtraight, round, rugged, not hairy or downy, *branches*. *Leaves* ſomewhat elliptical, two or three inches long, and nine or ten lines broad; green, ſmooth, and very ſhining above; veiny, pale, and rather ſilky, with minute cloſe hairs beneath; the margin a little revolute. *Cluſters* ſmall, corymboſe, of four or five *flowers*, whoſe ſtalks are embraced by little roundiſh *bracteas*. *Calyx* coriaceous, brown, pitcher-ſhaped, ſcarcely divided. Bud of the *petals* oblong, triangular, acute. *Fruit* unknown. *De Cand.*

7. X. *acuminata*. Long-pointed Bitter-wood. " Dunal Monogr. 122. t. 16." De Cand. n. 7.—" Leaves oblong-elliptical, very long-pointed, perfectly ſmooth. Capſules on long ſtalks, ſingle-valved, with two ſeeds."—Native of Cayenne. *Branches* round, rugged, ſmooth. *Leaves* on very ſhort footſtalks, four to ſix inches long, two inches wide, remarkably pointed, revolute, rather coriaceous; a little ſhining above. *Flowers* unknown. *Capſules* ovate, nine or ten lines in length, pointed, each tapering down into a long ſtalk, imperfectly bivalve, ſmooth and even. *Seeds* obovate, black, fœtid, convex at the outſide, flat at the inner. *De Cand.*

8. X. *prinoides*. Winter-berry Bitter-wood. " Dunal Monogr. 122. t. 15." De Cand. n. 8.—" Leaves oblong-lanceolate, ſmooth, membranous, pointed; bluntiſh at the extremity. Flowers ſolitary. Capſules with two valves." —Native of Cayenne. *Branches* wand-like, ſlightly rugged. *Leaves* on ſhort ſtalks, ſmooth on both ſides, three or four inches, (the author, by miſtake as we preſume, ſays three or four lines,) in length, and from twelve to fifteen lines broad; ſhining above; rather glaucous beneath. *Stalks* ſingle-flowered, axillary, very ſhort, each bearing an extremely minute *bractea*. *Calyx* deeply three-cleft. *Petals* ovate, acute, ſcarcely two lines long, being the ſmalleſt of this genus, or perhaps natural order. *Capſules* ſtalked, imperfectly bivalve. *Seeds* two, flat at the inner ſide, convex at the outer. *De Candolle*.

XYLOPICRUM. See XYLOPIA *ſupra*.

XYLOPOLIS, in *Ancient Geography*, a town of Macedonia, in Mygdonia. Ptolemy.

XYLOSMA, in *Botany*, from ξυλον, *wood*, and οσμη, *a ſmell*, a name given by Dr. George Forſter to the *Myroxylon* of his father; the latter appellation having been appropriated by Linnæus to a different genus. (See MYROXYLON.)—Forſt. Prodr. 72. Schreb. Gen. 703. Willd. Sp. Pl. v. 4. 834. Mart. Mill. Dict. v. 4. Poiret in Lamarck Dict. v. 8. 817. Lamarck Illuſtr. t. 827. (Myroxylon; Forſt. Gen. t. 63. Juſſ. 444. Lamarck Dict. v. 4. 192.)—Claſs and order, *Dioecia Polyandria*. Nat. Ord. *uncertain*. Juſſ.

Gen. Ch. Male, *Cal.* Perianth in four or five deep, roundiſh, minute, ſpreading ſegments. *Cor.* Petals none. Nectary minute, annular, finely crenate, ſurrounding the ſtamens. *Stam.* Filaments numerous (20—50), capillary, twice the length of the calyx; anthers roundiſh, ſmall.

Female, on a diſtinct tree, *Cal.* as in the male. *Cor.* Petals none. Nectary as in the male, ſurrounding the germen. *Piſt.* Germen ſuperior, roundiſh-ovate; ſtyle very ſhort, cylindrical; ſtigma obtuſe, flat, obſcurely three-cleft. *Peric.* Berry? dry, oblong, imperfectly divided into two cells by a partition from the bottom. *Seeds* two in each, triangular, convex at the back, flat at the ſides.

Eſſ. Ch. Male, Calyx in four or five deep ſegments. Petals none. Nectary annular, crenate. Stamens from twenty to fifty.

Female, Calyx and Nectary as in the male. Style very ſhort. Stigma ſlightly three-cleft. Berry dry, of two incomplete cells. Seeds two to each cell.

1. X. *ſuaveolens*. Serrated Sweet-wood. Forſt. Prodr. n. 380. Willd. n. 1. (Myroxylon ſuaveolens; Forſt. Gen. 63. n. 1.)—Leaves ovate, ſerrated.—Native of the Society iſlands of the South ſeas. The inhabitants employ this wood, to give a fragrant ſcent to cocoa-nut oil, for anointing their hair. We know not whether this be the precious Red Sanders Wood of the South ſea iſlands, for a ſpecimen of which we are indebted to ſir Joſeph Banks, whoſe ſcent reſembles that of the Eaſt Indian wood of the ſame name. The tree which produced it was, as long as poſſible, kept from the knowledge of our European voyagers.

2. X. *orbiculatum*. Entire-leaved Sweet-wood. Forſt. Prodr. n. 381. Willd. n. 2. (Myroxylon orbiculatum; Forſt. Gen. 63. n. 2.)—Leaves roundiſh, entire.—Native of Savage iſland. We have never ſeen a ſpecimen of either ſpecies.

XYLOSTEON, a name by which ſome authors have called the ſmall red-berried double-fruited *chamæceraſus*.

XYLOSTEUM, Dod. Pempt. 411. Tourn. 609. t. 379. Juſſ. 212. Purſh 161. (Chamæceraſus; Tourn. ibid.), a word formed of ξυλον, *wood*, and οστεον, *bone*, being ſynonymous with a Swiſs name for the ſame ſhrubs, which

alludes

alludes to the hardnefs of their wood, and perhaps to its tubular form, filled with pith, as a bone is with marrow. The authors who retain this genus fplit the Lonicera of Linnæus, (fee that article,) into feveral, without neceffity or utility, offering, in our opinion at leaft, great violence to nature.

XYLOSTROMA, fo called from ξυλον, *wood*, and στρωμα, *a ftratum*, or *layer*, becaufe this fungus forms indeterminate expanfions, like cloth or leather, in the infide of the trunks or branches of trees.—Tode Fung. Mecklenb. v. 1. 36.—Clafs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi angiocarpi?*

Eff. Ch. Expanded, coriaceous, two-fided, fhapelefs, concealed; furface fmooth and even. Seminal globules very minute, attached to internal fibres.

1. X. *giganteum*. Oak Leather. Tode as above, t. 6. f. 51. Sowerb. Fung. t. 358. (Racodium Xyloftroma; Perf. Syn. Fung. 702. Fungus coriaceus quercinus hæmatodes; Raii Syn. 25. "F. ampliffimus; Scop. Pl. Subterr. 116. t. 44." Byffus candida β; Lightf. Scot. 1004.)—This fingular production is found in the centre of the trunks of growing oaks, fpreading in the form of a piece of cloth or leather, with numerous ramifications, through fome of the largeft trees. But whether it is, like the *Boletus lachrymans*, or Dry Rot, in wrought timber, the caufe of their decay, or its confequence, we have not fufficient information to decide. Tode's obfervations countenance the former opinion. He fays the wood of the trees, occupied by this fungus, becomes rotten and perfectly dry. Its fmooth furfaces are owing to the fmoothnefs of the fiffures, through which it fpreads in a tender ftate, and its branching indeterminate figure arifes from the irregularity and fubdivifion of thofe fiffures. The infide is fpongy, or partly hollow, occupied with branching fibres, bearing numerous little ovate *capfules*, or *receptacles*, whofe apex appeared to Mr. Sowerby to have an opaque lid. The whole fungus is very durable, remaining unchanged for many years. Its hue is generally an uniform buff or pale tan colour; but Perfoon notices a whitifh variety, more compact than the ufual kind; and a faffron-coloured one, found by Schrader. We cannot well reduce the *Xyloftroma* to any other genus of this natural order. The *Racodium*, Perf. Syn. 701, defined as "expanded and foft, refembling cloth in its denfely interwoven fibres," feems to us but a vague affemblage; the firft fpecies being *Byffus nigra*, which fome make a *Lichen*, others a *Conferva;* the fecond a *Mucor*.

XYLOSTROTON, formed of ξυλον, *wood*, and στρωτος, *laid*, among the *Ancients*, an appellation given to Mofaic or chequered work.

XYLUS, in *Ancient Geography*, a town of Afia Minor, in Caria. Steph. Byz.

XYMETHUS, a town of Africa, in the interior of Cyrenaica. Ptol.

XYMPATHESIS, a word ufed by fome of the old medical writers for fympathy.

XYNERESIS, formed of ξυν, or συν, *together*, and αιρεω, *I feize*, a word ufed by Hippocrates, and others of the ancients, to exprefs a firm cohefion or connection of any two things. Some ufe it to exprefs that firm fhutting together, or clenching of the teeth, which happens in convulfions.

XYNIA, in *Ancient Geography*, a borough of Theffaly, on the confines of Perrhœbia, near a lake of the fame name. Livy.

XYNOECIA, formed of ξυν, or συν, *with*, and οικεω, *I inhabit*, a feaft among the ancient Athenians, inftituted on occafion of Thefeus's uniting all the petty communities of Attica into one commonwealth; the affemblies of which were to be held at Athens, in the Prytaneum.

XYPHOID, in *Anatomy*, a name given to the cartilage, which forms the inferior extremity of the fternum. See the defcription of the *fternum*, in the article Lungs.

XYRIS, in *Botany*, an ancient name, of unknown derivation, ξυρις, or rather ξειρις of the Greeks, fuppofed to belong to our *Iris fœtidiffima*, transferred by Gronovius to the prefent genus, as one of nearly fimilar habit and characters. They are not, however, of the fame natural order.—Linn. Gen. 29. Schreb. 39. Willd. Sp. Pl. v. 1. 254. Vahl Enum. v. 2. 204. Mart. Mill. Dict. v. 4. Brown Prodr. Nov. Holl. v. 1. 255. Purfh 33. Juff. 44. Kunth Nov. Gen. et Sp. v. 1. 255. Poiret in Lamarck Dict. v. 8. 818. Lamarck Illuftr. t. 36. Gærtn. t. 15.—Clafs and order, *Triandria Monogynia*. Nat. Ord. *Enfatæ*, Linn. (rather *Tripetaloideæ*.) *Junci*, Juff. *Reftiaceæ*, Brown, Kunth.

Gen. Ch. (corrected from Brown and Gærtner), *Cal.* Perianth inferior, of three concave chaffy leaves; the outermoft hooded, deciduous; the two lateral ones keeled, compreffed, curved, acute, converging, permanent. *Cor.* Petals three, large, fpreading, flat, crenate; with narrow claws, as long as the calyx. Nectaries three, feathery, alternate with the petals; fufpected by Brown and Kunth to be barren ftamens. *Stam.* Filaments three, inferted into the claws of the petals, much fhorter than the limb, thread-fhaped, erect; anthers oblong, incumbent. *Pift.* Germen fuperior, obovate, three-lobed; ftyle one, thread-fhaped, rather longer than the claws of the petals, three-cleft at the fummit; ftigmas obtufe, entire, or jagged. *Peric.* Capfule roundifh, of one cell and three valves, with three more or lefs prominent receptacles, running down the middle of each valve. *Seeds* numerous, minute, roundifh or elliptical, acute.

Eff. Ch. Calyx of three unequal leaves; the two lateral ones permanent. Petals three, equal. Nectaries three, feathery. Capfule fuperior, of three valves, with central receptacles. Seeds numerous.

A genus of perennial herbs, with fibrous *roots*. *Leaves* radical, numerous, fword-fhaped, or thread-fhaped; dilated, equitant, and membranous at the bafe. *Flower-ftalk* perfectly fimple, wrapped in a fheath at the bottom. *Head* terminal, folitary, its fcales membranous, fingle-flowered, clofely imbricated; the outer ones fometimes empty, and unlike the reft. *Anthers* pofterior. *Brown*. *Flowers* almoft invariably yellow.

Linnæus was acquainted with but one fpecies, *X. indica*. Several others have been determined by various authors, infomuch that Willdenow defines four, and Vahl ten in all. Mr. Brown has fifteen from New Holland alone, and there is a new one from South America. The author juft mentioned divides this genus into two fections. Thofe fpecies which belong to the firft fection have a capfule of one cell, whofe receptacles are feparate at the bafe; of thefe there are thirteen found in New Holland. The fecond fection is characterized by a capfule incompletely divided into three cells, the receptacles being combined in their lower part. Of this there are two New Holland fpecies. It is utterly impoffible for us to follow this arrangement, few people having feen half the fpecies in any ftate, much lefs their ripe capfules. We are poffeffed of ten, which appear to be diftinct, and which can be referred, with tolerable certainty in general, to as many defcribed fpecies. For the remainder we fhall cite our authorities.

1. X. *indica*. Eaft Indian Xyris. Linn. Sp. Pl. 62, excluding the fynonyms of Gronovius, Morifon, and Pifo. Linn.

Linn. Zeyl. 14. Willd. n. 1. Vahl n. 1. (Gladiolus indicus, flore tripetalo; Rudb. Elyf. v. 2. 17. f. 8. Gladiolo lacuftri accedens malabarica, e capitulo botryoide florifera; Pluk. Almag. 170. t. 416. f. 4. Kotsjilettipullu; Rheede Hort. Malab. v. 9. t. 71. Ranmotha; Herm. Zeyl. 41.)—Stalk furrowed, with many angles. Head ovate.—Native of the Eaft Indies, and perhaps of Sierra Leone. The *leaves* are defcribed by Vahl as fometimes a foot long, equalling the flower-ftalks, lax, acute, almoft the breadth of the nail; but he never faw any fo broad as in Rheede's figure. The *flower-ftalks* are feveral, rather more flender than a pigeon's quill, furnifhed with fix or eight furrows, and twifted in the lower part. *Head* rather fmaller than a Hazel-nut, with roundifh fcales. Our fpecimens, gathered by the late Mr. Smeathman at Sierra Leone, have no *leaves*, but the *ftalk* and *head* anfwer exactly to the above defcription. The *fcales* are from twenty-five to thirty in each head, rounded, or nearly orbicular, convex, clofely imbricated, obtufe, brown, but little polifhed, divided lengthwife into three nearly equal fpaces, or regions, (as is the cafe in moft of the fpecies that we have feen); the middle region here is flightly hoary or downy, the fide-ones fmooth. The *flowers* are paft. The *head* in thefe fpecimens is nearly globofe; not oblong, as in Gærtner's figure, marked *X. indica*. A few of the loweft fcales are flatter and rather fmaller than the reft, apparently always barren, or unaccompanied by flowers. Whatever Mr. Purfh's *X. indica* may be, it cannot belong to this fpecies. He defcribes the *leaves* very long and graffy, twifted as well as the *ftalks*.

2. X. *pubefcens*. Downy-fheathed Xyris. Poiret n. 2. —"Stalk ftriated, almoft cylindrical, enveloped in a downy fheath. Leaves greatly elongated."—Received by profeffor Desfontaines, from the Weft Indies. Nearly related to *X. indica*, but differing in feveral characters peculiar to itfelf. The *roots* are long, as thick as the finger, with foft, rather flefhy, nearly fimple, fibres, as thick as a raven's quill; and producing from the crown a great number of foft, flaccid, alternate, fomewhat imbricated, very fmooth *leaves*, a foot or foot and a half long, half an inch wide, entire, pointed; dilated at the bafe. *Stalks* ftraight, rather flender, twifted at the lower part, where they are each embraced by a cylindrical, ftriated, downy *fheath*, three or four inches long, terminating in a little fhort acute leaf. *Head* of *flowers* oval, obtufe, the fize of a large pea, formed of numerous, imbricated, very clofe, unequal, whitifh fcales; the outer ones a little dilated, oval, nearly flat, fcarcely pointed; the inner narrower, obtufe, rather concave. *Poiret*. See our *X. anceps*, which has alfo a very long leafy-pointed *fheath*, but it is quite fmooth.

3. X. *macrocephala*. Great-headed Xyris. Vahl n. 2.— "Stalk with one acute angle. Head and fcales ovate; the latter grey at the back."—Native of Cayenne. Defcribed from the herbarium of profeffor Desfontaines. The *leaves* are eighteen inches long; as broad as the nail, or broader. *Stalks* taller than the foliage; round in the lower part; fomewhat two-edged further up, with one convex and one acute fide. *Head* when in fruit twice as big as a Hazel-nut, ovate, with obtufe *fcales*. This differs from the reft in the breadth of its *leaves*, and the fize of the *head*. *Vahl*.

4. X. *platycaulis*. Broad-ftalked Xyris. Poiret n. 4.— Stalk compreffed, dilated, ftriated, fmooth; twifted below; with a lax, cloven, abrupt fheath at the bafe. Heads globofe, abrupt at the fummit.—Gathered by Commerfon in Madagafcar. *Leaves* wanting in the fpecimens. *Stalks* a foot high; two or three lines broad. *Sheath* at leaft three inches long, fmooth, ftriated, rather lax, cloven lengthwife, obliquely truncated at the fummit. *Head* hardly fo big as a pea, flattifh at the top, with broad, obtufe, concave, fhining, chefnut-coloured fcales, the outer ones keeled towards their point. *Poiret*. We have enlarged the author's fpecific character from his own defcription, in order the better to contraft this fpecies with the two following, with which it appears to agree in the flatnefs of the *ftalk*.

5. X. *anceps*. Small-headed Two-edged Xyris. Lamarck Illuftr. v. 1. 132. Vahl n. 3.—"Stalk two-edged, fmooth. Head nearly globofe."—Native of Madagafcar, and Malabar; perhaps alfo of Guiana. *Leaves* rather rigid, narrow, but one-third or one-fourth the height of the *ftalks*, which are feveral, a foot or more in height, twifted, fmooth, by no means ftriated. *Head* fcarcely fo large as a pea, with roundifh, convex, hardly emarginate, fcales. *Petals* yellow, finely toothed. *Vahl*. A Guiana fpecimen, communicated by Mr. Rudge, remarkable for the fmallnefs of its *head* in proportion to the herbage, anfwers precifely in every point to Vahl's defcription. Aquatic, or marfh-plants, fuch as the fpecies of this genus, are known to grow, more than any others, in widely diftant and diffimilar parts of the world. We have fufpected this Guiana fpecimen might be Poiret's *X. pubefcens* n. 2; but the fheath at the bafe of the ftalk is not pubefcent.

6. X. *complanata*. Flat-ftalked Xyris. Brown n. 1.— "Stalk compreffed flat, dilated, nearly ftraight; cartilaginous and rough at the edges, four times as long as the fword-fhaped, ftraight, bordered, roughifh leaves. Spike oblong or cylindrical. Scales orbicular, tumid."—Gathered by Mr. Brown, in the tropical part of New Holland. The *ftalk* is a line and a half broad. We have feen no fpecimen.

7. X. *fcabra*. Rough Xyris. Br. n. 2.—"Stalk two-edged, twifted, with rather acute and rough angles. Leaves linear, roughifh. Head ovate or oblong."—From the fame country. The *ftalk* is hardly a line in breadth. *Brown*.

8. X. *lævis*. Smooth Xyris. Br. n. 3.—"Stalk two-edged, fmooth, as well as the narrow linear leaves. Head nearly ovate. Scales imbricated every way. Keels of the calyx-leaves fringed."—Gathered by Mr. Brown near Port Jackfon, as well as in the tropical part of New Holland. The *ftalks* are from fifteen to eighteen inches high.

9. X. *americana*. Blue American Xyris. Aubl. Guian. 40. t. 14, very bad. Vahl n. 4. Symb. v. 3. 8. Willd. n. 3. Poiret n. 6. (Jupicai; Pif. Braf. 238.)—Stalk two-edged in the upper part. Head ovate-oblong. Scales polifhed, emarginate, with a fmall callous intermediate point. —Native of moift paftures in Brafil, flowering in the rainy feafon, according to Pifo, whofe fynonym was verified by Vahl, from an infpection of Marcgraav's herbarium. Aublet found the fame in wet meadows near the river Macouria, in Guiana, flowering in December; but his figure is made up, as Vahl obferves, with the leaves of an *Eriocaulon;* the fcales of the *head*, and the *flowers*, being moreover very ill drawn. We have never met with a fpecimen anfwering to this fpecies. Vahl fays the *leaves* are graffy, narrow, and acute, half the length of the *ftalk*, which is a foot or more in height; round in the lower part, with two prominent lines running down it; compreffed in the upper part, and a little dilated under the *head*. The latter is obtufe, rather bigger than a pea. *Scales* oblong, concave, cloven at the point, with a brownifh, rather callous point in the notch. *Vahl*. The *corolla* is faid to be blue, of which we know no other inftance in this genus.

10. X. *caroliniana*. Carolina Xyris. Walt. Carol. 69. Vahl n. 5. Poiret n. 7. Purfh n. 2. (X. Jupicai; Michaux Boreal.-Amer. v. 1. 23, according to Vahl.)— —"Stalk two-edged. Head ovate, acute."—Native of Carolina.

Carolina. *Vahl.* Found in low graffy fields, on a fandy foil, from New Jerfey to Florida. Perennial, flowering from June to Auguft. *Heads* fmall. *Flowers* yellow. It is extremely variable. *Purfh.* Vahl thought this fpecies diftinct from the laft, in having more rigid *leaves*, and larger *heads*, which are acute, inftead of being remarkably obtufe. The *flowers* moreover are yellow, not blue. The *leaves* vary in length. The heads in Lamarck's fpecimens are longer than thofe of Richard's. *Vahl.* We have not feen this fpecies, but it feems that more than one may poffibly here be confounded.

11. X. *torta.* Twifted-leaved Xyris. (X. indica; Purfh n. 1, excluding the fynonyms.)—Leaves linear, fpirally twifted, as well as the ftalk, which is two-edged below, quadrangular at the upper part. Head globofe. Scales polifhed, rounded, fomewhat emarginate, pointlefs, with a fmall filky difk.—Gathered in North America by Kalm. Linnæus confounded his fpecimens with *X. indica*, which he knew but imperfectly. They appear, however, to anfwer exactly to the *indica* of Purfh, who very properly gives an original fpecific character, inftead of copying what did not agree with the plant before him. He found it in overflowed meadows, and fmall ponds, from Pennfylvania to Virginia; perennial, bearing yellow *flowers* in June and July. He calls the *leaves* "*longiffimè graminea.*" In our fpecimens they are from one to ten inches long, a line broad, acute, many-ribbed, roughifh at the edges, perfectly graffy; the outermoft degenerating into broad, fhort, chefnut-coloured, pointed, imbricated fcales. *Stalks* folitary, about two feet high; nearly round, though two-edged and ftriated, at the bottom, as well as very much twifted, even more than the leaves; the upper part is lefs fo, more evidently two-edged; and towards the top there are four, not always equal, angles. *Head* the fize of a large white currant, obtufe, of a fhining chefnut-colour. *Scales* almoft orbicular, convex; dilated and thin at the edges; marked at the back, juft below the notch, with a pale, greenifh, filky fpot. Two or three of the lowermoft of all are fmaller, flatter, a little keeled.

12. X. *pufilla.* Dwarf Broad-leaved Xyris. Brown n. 4.—Stalk two-edged, fmooth, like the fhort, fword-fhaped, two-ranked, equitant leaves. Head orbicular, compreffed, of a few fhining, fomewhat keeled and pointed, fcales.—Gathered by Mr. Brown, in the tropical part of New Holland. Our fpecimens, in the herbarium of the younger Linnæus, were probably given to him when in England, by fir Jofeph Banks and Dr. Solander. The *ftalks* are from two to fix inches high, pale green, a little zigzag and twifted, fomewhat quadrangular; fheathed at the bafe with one or two *leaves*, which, like thofe that grow from the root, are about an inch long, and two or three lines broad, flightly incurved at the point, of a pale rather fhining green, with feveral ribs, and a finely dotted, or reticulated, furface in the dry ftate. *Head* the fize of a pea. *Scales* orbicular, convex, of a fhining chefnut-brown, pale at the edges: the two lowermoft equal, without *flowers*, in an early ftate covering the whole head, and furnifhed with a ftrong, green, pointed keel.

13. X. *denticulata.* Tooth-leaved Xyris. Br. n. 5.—Stalk roundifh, fmooth. Leaves fhort, linear-awlfhaped; rough with minute marginal teeth. Head globofe. Scales orbicular, fhining, keeled at the fummit.—Gathered in the tropical part of New Holland, by fir Jofeph Banks and Dr. Solander, who gave fpecimens to the younger Linnæus. This is about the fize of the laft, or rather taller. The *root* confifts of very fmall fibres. *Leaves* from one to two inches long, not a line broad, their fine reticulations feeming to form the little teeth, at the margin and keel. *Stalk* flender, ftriated or angular towards the top. *Head* twice the fize of the laft, of more numerous, bright-chefnut *fcales*, with thin, pale, often jagged margins, and a little green fhort keel, or point, not extending beyond the fcale. The two lowermoft *fcales* are barren, as in the preceding, and in a young ftate enclofe the whole head.

14. X. *paludofa.* Bog Xyris. Brown n. 6.—"Stalk roundifh, fmooth; angular at the top. Leaves fomewhat tubular; that of the ftalk longer than the fheath. Head nearly globular. Scales orbicular, fhining, imbricated every way."—Found in the tropical part of New Holland, by fir Jofeph Banks and Dr. Solander. We have feen no fpecimen, nor did Mr. Brown himfelf meet with this or the laft fpecies, any more than with the *pauciflora* hereafter defcribed.

15. X. *capenfis.* Cape Xyris. Thunb. Prodr. 12. Fl. Cap. v. 1. 310. Willd. n. 4. Vahl n. 6.—Stalk folitary, thread-fhaped, ftriated. Leaves linear, very fhort. Head ovate, acute. Scales ovate, obtufe, fmooth.—Native of hills near Verkeerde valley, at the Cape of Good Hope, flowering in December. *Stalk* a foot high, or more, flender, fmooth, very finely ftriated. *Leaves* few, radical, fmooth, many times fhorter than the ftalk. *Flowers* yellow. *Stigmas* three, tumid, revolute, whitifh. *Thunberg.*

16. X. *brevifolia.* Short-leaved American Xyris. Michaux Boreal.-Amer. v. 1. 23. Vahl n. 7. Purfh n. 3.—"Stalk thread-fhaped. Leaves awl-fhaped, compreffed. Head globofe. Scales oblong; the outermoft narroweft, keeled."—Native of low boggy meadows, in Lower Carolina and Georgia; perennial, flowering in July. The fmalleft American fpecies. *Flowers* yellow. *Purfh. Leaves* narrow, an inch and a half long. *Stalk* a fpan high, round and flender. *Head* the fize of a black pepper-corn. *Scales* broadifh-oblong. *Vahl.*

17. X. *pauciflora.* Few-flowered Xyris. Willd. n. 2. Phytogr. 2. t. 1. f. 1. Vahl n. 8. Br. n. 7.—Stalk quadrangular. Leaves linear; rough with minute marginal teeth. Head nearly globular. Scales fhining, orbicular; fpreading at the point, with a fhort triangular keel.—Gathered by Koenig and Rottler in the Eaft Indies; and by fir Jofeph Banks, in the tropical part of New Holland. The *root* is a fmall denfe tuft of pale fibres. *Stalk* from one to fix or eight inches high, erect, ftraight, flender, ftriated, roughifh. *Leaves* feveral, erect, fometimes nearly as tall as the ftalk, graffy, very narrow, taper-pointed, ftriated, roughifh, efpecially at the edges, where they are minutely toothed, or crenate, as in *X. denticulata*, n. 13. *Head* the fize of a large pea. *Scales* chefnut-coloured, with a membranous, dilated, fhining margin of a golden yellow, and each tipped with a green, triangular, projecting keel, or point, originating from the brown difk, but not extending beyond the membranous margin, with which it is incorporated. The prominence of this point, giving the head a fquarrofe afpect, is well expreffed in Willdenow's, otherwife miferable, figure. The two lowermoft *fcales* are barren, and clofely preffed to the next. *Corolla* yellow.

18. X. *bracteata.* Bracteated Xyris. Br. n. 8.—Stalk triangular. Leaves linear; their margins, and bafe of the keel, rough. Head roundifh. Scales with a hoary difk, and brown membranous margin; the lower ones oblong, empty, with a linear difk.—Sent from Port Jackfon, New South Wales, by Dr. White, in 1792. Mr. Brown found it in the fame country, and we borrow from him the above characters of the *leaves*, wanting in our fpecimens. The *ftalk* is a foot and a half high, flender and rufhy, bluntly triangular, even, fmooth to the touch, though Mr. Brown remarks that its moft acute angle is roughifh. *Head* rather

ovate

ovate than perfectly globose, one-third of an inch in length. *Scales* elliptical, abrupt, or partly emarginate; their disk elliptic-oblong, convex, not keeled, of a hoary or glaucous hue, finely dotted, not downy; their margin, at each side, about half as broad, membranous, of a shining brown, paler outwards. Three, four, or more, *scales*, at the bottom of each head, are destitute of flowers, shorter, much narrower, abrupt, oblong, not elliptical, with a peculiarly narrow disk, and have the appearance of *bracteas*. *Corolla* rather large, yellow, turning white in decay.

19. X. *juncea*. Rushy Xyris. Brown n. 9.—" Stalk roundish, slightly compressed, rather zigzag, smooth as well as the awl-shaped leaves. Head globose. Scales ovate, undivided, imbricated every way; their disk of the same colour as the margin. Stigmas many-cleft."—Gathered by Mr. Brown, in the neighbourhood of Port Jackson, New South Wales. The *stalk* is only eight or ten inches high. We have no specimens answering to the above characters.

20. X. *gracilis*. Slender Xyris. Brown n. 10?—Stalk thread-shaped, smooth, scarcely twisted. Leaves linear, straight, rough-edged. Head oval, of few flowers. Scales imbricated every way; their disk hoary; margin blackish. Stigmas undivided.—Sent from Port Jackson, in 1792, by Dr. White. Mr. Brown mentions only the south part of New Holland, and Van Diemen's island, as the native country of this species, and yet we cannot refer our specimens to any other mentioned by him. Our plant is about half the size of *X. bracteata*, with fewer and paler *flowers*. *Head* small, elliptical, or obovate. *Scales* with a broad, hoary, or glaucous, disk, like that of the *bracteata;* but their membranous margin is of a darker brown, and, at the upper part of each scale, quite black, as if burnt. Several of the lowermost scales are smaller, linear-oblong, and of a more uniform brown. The *stigmas* are long, and undivided. *Stalk* somewhat compressed, seldom above a foot high; Mr. Brown says a foot and half.

21. X. *filiformis*. Thread-shaped Xyris. Lamarck Illustr. 132. Vahl n. 9. Poiret n. 9.—Stalk thread-shaped, compressed. Leaves linear-awlshaped, compressed, two-ranked. Head and scales elliptical; disk and margin uniform, with slight traces of a keel.—Gathered by the late Mr. Smeathman, as well as by Dr. Adam Afzelius, in marshy sandy ground at Sierra Leone. The *root* is small and fibrous. *Leaves* four or five, seldom more, equitant, erect, linear-swordshaped, compressed, very narrow, tapering, but rather obtuse at the point; their surface minutely speckled, and more or less evidently reticulated, or dotted; their length, in our specimens, from one to two inches; Vahl says scarcely half an inch. *Stalk* solitary, six or eight inches high, very slender. *Head* the size of hemp-seed, but more oblong, acute at each end, of a copper-brown, not very shining; the two lowest scales empty, rather palest, most oblong, and strongly keeled; the rest elliptical, bluntly pointed, very smooth and even, without any limited disk, but sometimes marked with beautiful concentric veins; their keel scarcely discernible, except in the form of a short pale elevation, near the apex, but not projecting into a point. *Corolla* yellow, small.

22. X. *flexifolia*. Wavy-leaved Xyris. Br. n. 11.—" Stalk thread-shaped, twisted, smooth, as well as the zigzag, slender, slightly compressed, leaves. Head oval, with few flowers. Stigmas undivided."—Found by Mr. Brown, on the southern coast of New Holland. *Stalk* from six to twelve inches high.

23. X. *teretifolia*. Cylindrical-leaved Xyris. Br. n. 12. —" Stalk, as well as the leaves, round, straight, and roughish. Head ovate, many-flowered. Scales imbricated every way, torn into many segments."—From the same country. *Stalk* eighteen inches high. *Brown*.

24. X. *lacera*. Jagged-headed Xyris. Br. n. 13.—" Stalk round, smooth. Head nearly globular, many-flowered. Scales imbricated every way, torn into many segments."—Discovered by Mr. Brown, on the south coast of New Holland. We have seen no specimens of this, or the two species immediately preceding.

25. X. *subulata*. Awl-leaved Peruvian Xyris. " Fl. Peruv. v. 1. 46. t. 71. f. *b*." Vahl n. 10. Kunth n. 1.—" Stalk thread-shaped; roughish at the top. Leaves linear-awlshaped; their sheaths woolly at the margin. Head oblong, about three-flowered."—Native of marshy, cool, highly elevated, mountainous situations, in Peru, flowering in September. *Root* perennial. *Plants* growing together in patches. *Leaves* about an inch long; villous at the base. *Stalk* slender, about eight inches high. *Flowers* yellow, two or three only in each head. *Vahl.*

26. X. *vivipara*. Viviparous Xyris. Kunth n. 2.—" Stalk somewhat compressed; roughish at the top. Leaves linear-swordshaped; their sheaths fringed. Head globular; at length leafy and viviparous."—Gathered by Humboldt and Bonpland on the banks of the river Oroonoko, between the mouths of Ventuario and Guaviares, flowering in May. *Root* fibrous, perennial. *Leaves* all radical, two-ranked, from two to four inches long, erect, bluntish, sheathing, smooth, except a little roughness at the back; their *sheaths* keeled, striated, fringed, roughish also at the back. *Stalks* about a foot high, smooth, except some roughish points towards the summit; enveloped at the base with a striated, keeled, bluntish, smooth, rough-backed *sheath*, an inch and a half long. *Head* globose, rather abrupt, the size of a pepper-corn. *Scales* roundish-ovate, bluntish, brownish, coriaceous, smooth, rather transparent at the margin. After flowering, the head throws out from its centre a leafy crown, which becomes a young plant. *Kunth.*

We are not told whether this leafy tuft originates in the vegetation of one or two of the seeds; or in the *germen* being supplanted in the flower by a bud; or, which is the least likely, in a proliferous elongation of the *stalk*, independent of the parts of fructification altogether.

27. X. *operculata*. Imbricated Xyris. Labill. Nov. Holl. v. 1. 14. t. 10. Brown n. 14. Poiret n. 13. Curt. Mag. t. 1158.—Capsule partly three-celled. Stalk round. Leaves thread-shaped. Head obovate. Scales beardless, imbricated in five rows, with numerous empty ones, gradually smaller, at the base.—Sent from Port Jackson, New South Wales, by Dr. White, in 1792. Mr. Brown also observed it there; and Labillardiere in Van Diemen's island. Neither the figure of the last-mentioned author, nor that in the Botanical Magazine, by any means represents the remarkable character of the five-ranked scales of the *head*, and the numerous, gradually diminishing ones, destitute of flowers, at its base; so that, but for Mr. Brown's authority, we should have supposed our Port Jackson plant to be essentially and widely different. Dr. White's specimens are without *leaves*. The *stalk* is about eighteen inches high, round, or slightly angular, quite smooth. *Head* obovate, full half an inch long, with five rows of very numerous obovate *scales*, whose broad convex disk is of a bronze-like hue; the margin brown and narrow, more or less jagged, with a deciduous tooth-like fringe. *Flowers* large, bright yellow. *Stigmas* obtuse.

28. X. *lanata*. Woolly Xyris. Br. n. 15.—" Stalk round, smooth. Leaves linear, narrow. Head nearly globose. Scales woolly at the extremity, imbricated in five rows, with several empty ones, gradually smaller at the base."—Gathered by Mr. Brown, on the southern coast of New Holland.

The above great accession of new species throws much light

light on this hitherto little-known, and ill-defcribed, genus of plants. Could they all be compared together, even in a dried ftate, we have no doubt that their fpecific characters, and the principles on which they are founded, would derive confiderable improvement; and that *Xyris*, whofe generic marks are fo well eftablifhed, would afford a beautiful difplay of clear and precife fpecific difcrimination. Whether the *leaves* of any of the fpecies be really toothed, in a living ftate, we have confiderable doubt. Their *foliage* partakes greatly of the cellular texture, fo remarkable in the neighbouring genus *Eriocaulon;* with which alfo they clofely accord in *inflorefcence*, and general habit. Mr. Brown, in his *Prodromus*, has elucidated both thefe genera, as far as concerns their numerous New Holland fpecies, with infinitely more fuccefs than any other botanift; the one genus having previoufly been fcarcely better underftood than the other.

XYSMALOBIUM, from ξυσμα, *a ftrip*, or *narrow fhred*, and λοβο-, *a pod*, alluding to the fhreddy coat of the feed-veffel, which is very peculiar.—Brown Tranf. of the Wernerian Soc. v. 1. 38. Afclep. 27. Ait. Hort. Kew. v. 2. 79.—Clafs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juff. *Afclepiadeæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, lanceolate, acute, permanent fegments. *Cor.* of one petal, in five deep, ovate, fpreading, rather oblique fegments. Crown of the ftamens in a fingle row of ten deep fegments; five of them flefhy, roundifh, oppofite to the anthers, fimple at the inner fide; five intermediate ones fmaller. *Stam.* Filaments fcarcely any; anthers five, each tipped with an ovate bluntifh membrane; maffes of pollen ten, compreffed, fmooth, pendulous, with rather broad connecting proceffes. *Pift.* Germens two, ovate, pointed; ftyles very fhort; common ftigma pointlefs. *Peric.* Follicles two, inflated, clothed all over with numerous, long, flender, tapering, hairy, filamentous proceffes. *Seeds* numerous, imbricated, crowned with filky down.

Eff. Ch. Maffes of pollen ten, fmooth, pendulous. Crown fimple, in ten deep fegments, the intermediate ones minute. Corolla fpreading. Follicles fhaggy.

A genus of upright fhrubs, with oppofite, fometimes alternate, *leaves*. *Umbels* lateral, either axillary, or between the *footftalks*. *Flowers* rather large; the limb of the *corolla* fometimes bearded. Only two fpecies are at prefent known, both natives of fouthern Africa.

1. X. *undulatum*. Waved-leaved Xyfmalobium. Dryand. in Ait. n. 1. (Afclepias undulata; Linn. Sp. Pl. 312. Willd. Sp. Pl. v. 1. 1262. See Asclepias, n. 1. Apocynum africanum, lapathi folio; Comm. Rar. 16. t. 16.)—Leaves undulated, naked. Corolla bearded.—Native of the Cape of Good Hope. Sent to Kew garden, in 1783, by Mr. John Græfer. This is a green-houfe plant, flowering in July. Mr. Aiton marks it as a *fhrub;* but Commelin fays the thick, white, perennial *root* fends up every year, in the early fpring, two or three thick, round, green, leafy *ftems*. All authors fpeak of the *leaves* as oppofite; but in our Linnæan fpecimen, gathered at the Cape by Thunberg, they are alternate, feffile, three or four inches long, ovato-lanceolate, gradually tapering to a bluntifh point, with a thick mid-rib, and numerous interbranching veins; nearly fmooth on both fides; undulated and roughifh at the margin. *Umbels* axillary, ftalked, much fhorter than the leaves, with hairy ftalks, and linear hairy *bracteas*. *Flowers* green, their fegments denfely bearded at the extremity, with white fhaggy hairs. *Follicles* covered with fpreading hairy filaments, an inch long. Every part of the plant, when wounded, difcharges a copious milky fluid.

2. X. *grandiflorum*. Large-flowered Xyfmalobium. (Afclepias grandiflora; Linn. Suppl. 170. Thunb. Prodr. 47. Willd. Sp. Pl. v. 1. 1264. See Asclepias, n. 26.)—Leaves ftalked, hairy. Corolla fmooth.—Gathered by Thunberg, at the Cape of Good Hope, but as yet a ftranger to our gardens, nor does the Linnæan collection contain a fpecimen. The *ftem* is faid to be fimple, erect, and hairy. *Flowers* large, axillary, ftalked; but, as far as we can gather, the umbel is not elevated on a common ftalk, as in the foregoing. *Corolla* fpeckled like *Fritillaria Meleagris*, and of a fimilar colour.

XYSTARCHA, in *Antiquity*, the mafter or director of the xyftus.

In the Greek gymnafium, the xyftarcha was the fecond officer: the firft was the gymnafiarch. The xyftarcha was his lieutenant, and prefided over the two xyfti, and all exercifes of the athletæ therein.

XYSTICI, among the *Ancients*, a defignation given to the athletæ, becaufe they performed their exercifes in the xyftus.

XYSTIS, in *Ancient Geography*, a town of Afia Minor, in Caria. Steph. Byz.

XYSTRIS, in *Botany*, Schreb. Gen. 138. Poiret in Lamarck Dict. v. 8. 822, is one of thofe genera of profeffor Schreber's, to which we have adverted under Wheelera, (fee that article,) as being unintelligible to all but thofe who may have accefs to the learned author's herbarium, or to fome record in his manufcripts. The name is Greek, ξυστρις, *a curry-comb*, or *fcraper*.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ* of Brown?

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, lanceolate, acute, fpreading, hifpid, permanent fegments, each contracted at the bafe. *Cor.* of one petal: tube very fhort; limb in five deep, ovate, obtufe, veiny, fpreading fegments. *Stam.* Filaments five, briftle-fhaped, erect, fpreading at the fummit, fhorter than the corolla, inferted into the middle of its tube; anthers oblong, erect. *Pift.* Germen fuperior, globofe, pointed; ftyles two, capillary, erect, combined in the lower part; ftigmas obtufe. *Peric.* Drupa globofe, furrounded at the bafe by fhort, proftrate hairs, inferted into the middle of the calyx. *Seed.* Nut globofe, furrowed, of ten cells; kernels oblong.

Whether this genus be founded on fome New Holland fpecimen of the natural order of *Epacrideæ*, and whether the rigid or prickly habit of the plant fuggefted the name, can only be matter of vague conjecture. We acknowledge that the divifion of the *ftyle*, and the hifpid fegments of the *calyx*, militate greatly againft our ideas of the fuppofed natural order. In total darknefs, however, any glimmering of light is welcome, and we will therefore hazard another conjecture, not altogether inconfiftent with the former. As Schreber places *Xyftris* immediately after the *Jacquinia* of Linnæus, can it poffibly have been founded on *Jacquinia rufcifolia*, of whofe fructification no botanift, as yet, has given any fufficient account? There feems an affociation of ideas between the habit of *Rufcus*, and the name of *Xyftris;* and the globofe pointed figure of the *fruit*, as copied from Plumier in *Dill. Hort. Elth.* t. 123, anfwers to part of the above defcription, though the permanent *calyx* is drawn obtufe, and not apparently hifpid.

XYSTUS, Ξυστος, formed of ξυειν, *to polifh*, or *rub*, in the *Ancient Architecture*, among the Greeks, was a long fpacious portico, either open, or covered over; in which the athletæ, and others, practifed wreftling and running.

The xyftus made a neceffary part of a gymnafium. The athletæ, who practifed in it, were thence called *xyftici*.

Xystus, among the Romans, was an alley, or double row of trees, meeting arbor-wife at top, and forming a fhade to walk under.

Y.

Y, The twenty-third letter in the Engliſh alphabet, borrowed, originally, from the Greek υ.

It is occaſionally both vowel and conſonant. As a vowel ſome authors have judged it unneceſſary in our language, becauſe its ſound is preciſely the ſame with that of the *i*. Accordingly, it is but little uſed, except in words borrowed from the Greek, to denote their origin, by repreſenting the Greek υψιλον.

The vowel *y*, however, has a place even in ſome words purely Engliſh; and that both in the middle of them, as in *dying*, *frying*, &c. and at the end, as in *lay*, &c.

Some aſcribe the uſe of the *y*, in pure Engliſh and French words, and thoſe that have no *y* in Latin or Greek, to this; that anciently each of thoſe words was written with a double *ii*; which having ſomething aukward in it, the *y* was ſubſtituted in their place.

Others ſay, that thoſe words being anciently written, as well as pronounced, with a double *ii*, as they ſtill are in the Walloon, as *paiing*, *paiiſan*, &c. to avoid their being miſtaken for an *u* with two dots over it, they made the ſecond *i* longer than the firſt, and ſo formed the *y* without deſigning it. Some give a particular reaſon why words ending in *i* came to be written with *y*; *viz*. that the copyiſts found the tail of the *y* very commodious, in adorning the margins and bottoms of pages.

Y was much uſed by the Saxons; whence it is found for *i* in the old Engliſh writers.

When the *y* follows a conſonant, and at the end of words, it is a vowel, and has the ſound of *i*; and when it precedes a vowel, or diphthong, and at the beginning of words, it is a conſonant.

Some have thought that *y* is in all caſes a vowel; but Dr. Johnſon obſerves of *y*, as of *w*, that it follows a vowel without any hiatus, as *roſy youth*.

The Romans uſed the *y* for the vowel *u*, which they had no character for, diſtinct from the *v* conſonant; their way being to pronounce the common *u*, as we do the diphthong *ou*; and the Greek υψιλον, as the Engliſh and French *u*.

Peter Diaconus obſerves, that Auguſtus firſt took the letters *y* and *z* from the Greeks, which were not uſed by the Romans before his time; *s s* being written for *z*, and *i* for *y*. But Mr. Jackſon ſhews, that the *y* was uſed before the time of Auguſtus, though probably (ſays Aſtle, Orig. and Progr. of Writing, p. 78.) it was not much older.

In our own and ſome other modern tongues, authors begin to diſpenſe more and more with the preciſe orthography, which requires all words that have an upſilon, in the Greek, to be written with a *y*. And with reaſon; ſince our Greek *y* has loſt the ſound it had, in the language from which we borrow it. But it is certainly ridiculous to uſe it, as many do, in words which indeed have a Greek origin, but have no *u* in the Greek, as in *eclipſe*: yet ſome affect to do this.

Y is alſo a numeral letter, ſignifying 150, or, according to Baronius, 159; as in the verſe,—

"Y dat centenos et quinquaginta novenos."

When a daſh was added at top, $\bar{Y}$, it ſignified 150 thouſand.

Pythagoras uſed the Y as a ſymbol of human life; the foot repreſenting infancy, and the forked top the two paths of vice and virtue, one or the other of which people are to enter upon, after attaining to the age of diſcretion.

Y, on the French coins, denotes thoſe ſtruck at Bourges.

Y, in *Geography*, a city of China, of the ſecond rank, in Chan-tong; 317 miles S.S.E. of Peking. N. lat. 35° 10′. E. long. 118° 19′.

Y, a city of China, of the ſecond rank, in Pe-tche-li; 55 miles S.W. of Peking. N. lat. 39° 25′. E. long. 115° 14′.

Y, or Ey, a river, or broad piece of water, which paſſes by Amſterdam, exhibiting the appearance of a creek of the ſea rather than of a river.

YA, a city of China, of the ſecond rank, in Se-tchuen, on the borders of Thibet; 840 miles S.W. of Peking. N. lat. 30° 9′. E. long. 102° 39′.

YABAQUE, one of the Bahama iſlands, ſituated in N. lat. 23° 30′.

YABARGULSKAIA, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 120 miles E. of Tobolſk.

YABAY, a town of Burmah; 50 miles S.W. of Ava.

YABTONOI, a ridge of the Altaian chain in Aſiatic Ruſſia, bending in a northerly direction to the vicinity of Ochotſk. The name denotes the mountains of Apples.

YACHT. See Ship, and *Plate* XIII. *Ship-Building*.

YACHTA, in *Geography*, a fort of Ruſſia, in the government of Irkutſk, on the borders of China; 48 miles S.S.W. of Selenginſk.

YACINTE, St. See St. *Yacinte*.

YACONG Tala, a number of ſmall lakes in Thibet, ſituated near each other. N. lat. 30° 50′. E. long. 78° 39′.

YADAVA, in *Hindoo Mythology*, a name of the Hindoo Kriſhna. It is ſaid to indicate his being of the family or tribe of Yadu.

YADI, in *Geography*, a river of Ruſſia, which runs into the Obſkaia gulf, N. lat. 68° 25′. E. long. 72° 38′.—Alſo, a river of Ruſſia, which runs into the Obſkaia gulf, N. lat. 67° 25′. E. long. 72° 18′.

YADKIN, a river of North Carolina, which riſes in the Allegany

Allegany mountains, and after a courſe of about 100 miles, changes its name to Pedee, in North Carolina; 9 miles S.W. of Salem.

YADRIN, a town of Ruſſia, in the government of Kazan; 122 miles W. of Kazan. N. lat. 55° 34′. E. long. 45° 44′.

YAEGONMEW, a town of Pegu; 58 miles S. of Prone.

YAFA. See JAFFA.

YAGARCHOCA, a lake of South America, in the juriſdiction of St. Miguel de Ibarra. It is famous for having been the ſepulchre of the inhabitants of Otabalo: upon this place being taken by Huana Capac, the 12th ynca, he, inſtead of ſhewing any clemency to them on account of their magnanimity, being exaſperated at the noble reſiſtance which they made againſt his army, ordered them all to be beheaded, both thoſe who had quietly ſurrendered, as well as thoſe taken in arms, and their bodies to be thrown into the lake: ſo that from the waters of the lake being tinged of a bloody colour, it acquired its preſent name, which ſignifies "a lake of blood."

YAGATH, in *Mythology*, a deity adored by the ancient Arabian idolaters, under the figure of a lion.

YAGO, ST. in *Geography*. See ST. *Tago*.

YAGUACHE, or ST. JACINTO DE YAGUACHE, a town of Peru, and principal place of a lieutenancy, in the province of Guayaquil; 25 miles N.E. of Guayaquil.

YAGUAHS, a town of the iſland of Cuba; 22 miles S. of Bayamo.

YAGUARIPE, a river of Braſil, which runs into the Atlantic, S. lat. 13° 12′.

YAGUARON, a town of South America, in the province of Paraguay; 10 miles S.E. of Aſſumption.

YAGUEPIRI, a river of Braſil, which runs into the Negro, 50 miles above Fort Rio Negro.

YAH, in *Hindoo Mythology*, a name of Pavana, the Hindoo god or regent of the wind; another of whoſe names is Vayu. See PAVANA and VAYU.

YAHANGA, in *Geography*, a ſmall iſland in the ſea of Japan. N. lat. 43° 8′. E. long. 131° 45′.

YAHEBIRI, a river of South America, which runs into the Parana, S. lat. 24° 20′.

YAIK, a conſiderable ſtream of Aſiatic Ruſſia, which flows into the Caſpian. The name has been recently changed for that of Ural, on account of a daring inſurrection of the tribes bordering on the Yaik.

YAITCHNEI, a ſmall iſland of Ruſſia, in the Penzinſkoi ſea. N. lat. 60° 30′. E. long. 160° 50′.

YAIVA, a river of Ruſſia, which runs into the Kama, 16 miles S. of Solikamſk, in the government of Perm.

YAK, in *Zoology*, the *bos grunniens* of the Linnæan ſyſtem, or ox with cylindric horns curving outwards, very long pendant hair, and extremely villous horſe-like tail, the grunting ox of Pennant, and yak of Tartary, has been lately particularly deſcribed by Turner, in his "Embaſſy to Tibet." He calls it the buſhy-tailed bull of Tibet; and in Hindooſtan it is denominated ſoora goy. It is about the height of an Engliſh bull, which it reſembles in the general figure of the body, head, and legs. He could diſcover no difference between them, except that the yak is wholly covered with a thick coat of long hair. The head is rather ſhort; the horns tapering from the root upwards, and terminating in ſharp points; arched inwards, and bending towards each other, but a little turned backwards near the extremities; the ears ſmall; the forehead prominent; the eyes full and large; the noſe ſmall and convex; the noſtrils ſmall; the neck ſhort and curved; the withers are high and arched; the rump low; over the ſhoulders riſes a thick muſcle, like the protuberance peculiar to the cattle of Hindooſtan, covered with a profuſion of ſoft hair; the tail compoſed of a prodigious quantity of long, flowing, gloſſy hair; the ſhoulders, rump, and upper part of the body, clothed with a ſort of thick ſoft wool, the inferior parts having ſtraight pendant hair that deſcends below the knee, and ſometimes trailing on the ground; from the cheſt, between the legs, iſſues a large pointed tuft of ſtraight hair, ſomewhat longer than the reſt; the legs very ſhort. In all other reſpects, this animal reſembles the ordinary bull. Theſe cattle appear of a large bulk; they have a downcaſt heavy look, and are, as they appear to be, ſullen and ſuſpicious, and very impatient at the near approach of ſtrangers. Their lowing is not loud, but a kind of ſcarcely audible grunting noiſe. They are paſtured in the coldeſt parts of Tibet, on the ſhort herbage peculiar to the tops of mountains and bleak plains. Their favourite haunt is the chain of mountains that is ſituated between the latitudes 27° and 28°, which divides Tibet from Bootan, and whoſe ſummits are commonly covered with ſnow. They are a valuable property to the tribes of itinerant Tartars, called Duckba, who live in tents, and tend them from place to place; they at the ſame time afford their herdſmen an eaſy mode of conveyance, a good covering, and wholeſome ſubſiſtence. They are never employed in agriculture, but are very uſeful as beaſts of burthen; for they are ſtrong, ſure-footed, and carry a great weight. Tents and ropes are manufactured of their hair, and caps and jackets are made of their ſkins. Their tails are much eſteemed; and under the denomination of *chowries*, they are univerſally uſed for driving away winged inſects, flies, and muſquitoes, and are employed as ornamental furniture upon horſes and elephants They ſupply an abundant quantity of rich milk and excellent butter, which may be kept in ſkins or bladders through the year, and to the utmoſt verge of Tartary furniſhes a very material article of commercial produce. The orientals highly value a large kind of bezoar that is ſometimes found in this animal's ſtomach. The yak is ſaid to vary in colour, as well as in the length and form of the horns. Thoſe with white tails are moſt eſteemed; and ſometimes their horns are as white as ivory.

In India no man of faſhion ever goes out or ſits in form at home without two "chowrabadars," or bruſhers, attending him, each furniſhed with one of theſe tails, mounted on ſilver or ivory handles, to bruſh away the flies. The Chineſe dye them of a beautiful red, and wear them as tufts to their ſummer bonnets.

Elian, according to Pennant, is the only ancient writer who takes notice of this ſingular ſpecies.

YAK, in *Geography*, a name given by the Oſtiaks to the *Oby*; which ſee.

YAKE DSAKE, a lake of Thibet, about 12 leagues in circumference. N. lat. 34° 40′. E. long. 90° 24′.

YAKSAI. See AKSHAI.

YAKSHA, in *Hindoo Mythology*, a race of malignant beings of hideous form, into whom the ſouls of bad men are ſaid to migrate; particularly the ſouls of ſuch as in this life are addicted to ſordid and baſe paſſions, or abſorbed too much in worldly proſperity. In the plural, they are termed Yakſhaſa; and are aſſigned as ſlaves or ſervants to Kuvera, the Plutus of the Hindoo Pantheon. Another race of beings, of a like deſcription, is called *Rakſha*. (See that article.) Rakſhni and Yakſhni are the feminines of theſe races of demons. Theſe names, and ſome note of their characters

characters and attributes, occur in the articles KUVERA, RAVENA, and SITANTA.

YAKSHNI-DEVI, a name and an inferior manifestation of the Hindoo goddess Parvati. It means goddess of malignant beings; one race of whom are in the masculine termed *Yaksha*, which article, and others thence referred to, the reader desirous of information concerning them may consult.

YAKSIMVAR, in *Geography*, a town of Russia, in the government of Viborg, on the north-west coast of lake Ladoga; 8 miles S. of Serdopol.

YAKUTSK, a town of Russia, in the government of Irkutsk, on the Lena, which is here about two leagues in width; but it is greatly impeded with ice, and navigable only by a few small boats, chiefly employed in supplying the town with provisions. This town is the capital of a province, to which it gives name: it contains between 500 and 600 houses, mostly of wood, with some stone churches, and is defended by a wooden fort. The best sables are found near this town and Nershinsk; 960 miles N.E. of Irkutsk. N. lat. 62° 5'. E. long. 129° 14'.

YAKUTSK, *the Province*. The Yakutes, or, as they denominate themselves, *Socho*, or natives of this province, are robust, and in general large; they resemble the Tartars in the cast of their features, and there is said also to be a great similarity in the idioms of these two people. Their ancient homestead extended from the Sayane mountains as far as the Angara and the Lena. Persecuted by the Buræts and Mongoles, they removed down the Lena to their present rude and inclement districts, where they are found in the government of Irkutsk on both sides of that river quite to the Frozen ocean. In the year 1620 they submitted to the Russian conquerors, and at the middle of the last century they numbered upwards of 40,000 bows; but since that time they are considerably increased. Their dress is simple, and nearly the same all the year round; the only difference is, that in winter it is made of skins; over their chemise they commonly wear a large striped waistcoat with sleeves; their breeches do not extend below the middle of the thigh, but their long boots, called *sarri*, reach above the knee. In hot weather they wear nothing but the breeches. Polygamy forms a part of the political code of this people; obliged to make frequent journies, a Yakute has a wife in every place where he stops, but he never assembles them together. Notwithstanding this licence, they are jealous to excess, and the sworn enemies of any one who shall dare to violate the rights of hospitality. When summer commences, they leave their winter habitations, and with their families and a small number of horses, make their harvests of fodder for consumption during the frost season. They repair to a considerable distance from their yourt, and to the most fertile cantons. In their absence, the horses are left to the care of the servants, and the neighbouring pastures serve for the maintenance of all their herds. Chamans, or sorcerers, are regarded as interpreters of the gods; they grant their mediation to the stupid Yakute, who implores it with trembling, but always pays for it. In the idolatry of the Yakutes, we find all the absurdities and superstitious practices of the ancient Kamtschadales, Koriaks, Tchutchis, and other inhabitants of these countries. The funerals are attended with a kind of pomp more or less magnificent, in proportion to the rank and wealth of the defunct. If a prince, he is arrayed in his finest habits, and most splendid arms. The body, placed in a coffin, is carried by the family to the tomb; deep groans announce the solemn procession; his favourite horse, and another the best in his stud, both richly caparisoned, and led by a valet, or near relation, walk by the side of the corpse. When arrived at the burying-place, they are tied to two stakes, fixed near the grave, and while the master is interred, their throats are cut over the corpse. This bloody libation is the homage paid to his attachment to these animals, who are supposed to follow him into the other world, where it is imagined that he will again be able to enjoy them. They are then flayed; the head and hide, in one entire piece, are fixed horizontally upon the branches of trees at a small distance from the grave; and such is the memorial that is erected. A fire is then kindled, and the last proof of friendship for the deceased consists in roasting and eating upon the spot these favoured animals: the feast being concluded the company disperses. The same ceremonial is observed for a woman, except that instead of a horse, they sacrifice her favourite cow. Their houses, like the yourts of the wandering Koriaks, are circular, spacious, and constructed with poles, fewer in number, but ranged in the same manner, and kept asunder by a sort of hoops at the top, the whole covered with the bark of the birch-tree, formed into pieces eighteen inches wide, placed in a downward direction. These pieces are edged with a kind of ribband, made of bark, and shaped into festoons, and the inside of the yourt is ornamented in the same manner. The taste of the ornaments is governed by the caprice of the proprietor, and there is in them a sort of wildness that is sufficiently amusing. The same decoration is annexed to the chairs and beds of the heads of families. The domestics lie upon the ground on mats or skins, and the fire is lighted in the middle of the house. See YUHAGHIRS.

YALE, a town of the island of Ceylon; 56 miles S.S.E. of Candi. N. lat. 6° 52'. E. long. 81° 20'.—Also, a river of Ceylon, which runs into the sea, on the S.E. side of the island, N. lat. 6° 23'. E. long. 81° 41'.

YALE *College*. See COLLEGE.

YALEPUL, in *Geography*, a town of Ceylon, at the mouth of the Yale; 30 miles S. of Yale.—Also, a town of the island of Ceylon, near the E. coast; 96 miles S.E. of Candi.

YALLAH'S BAY, a bay of the island of Jamaica, on the S. coast, situated to the E. of Yallah's Point.

YALLAH'S *Point*, a cape on the S. coast of Jamaica; 12 miles S.E. of Kingston. N. lat. 17° 53'. W. long. 76° 21'.

YALLAH'S *River*, a river of Jamaica, which runs into the sea, a little to the east of Yallah's Point.

YALMAL, a cape on the E. coast of Russia, in the Karskoe sea. N. lat. 72°. E. long. 68° 24'.

YALME, a river of Devonshire, which runs into the English Channel, 7 miles S.E. of Plymouth.

YALOFFS, YALLOFFS, *Jalofs*, or *Jalloffs*, an active, powerful, and warlike race of negroes, and esteemed the most handsome of those people, who inhabit a great part of that tract of Africa which lies between the Mandingo states, on the river Gambia to the S., and the Senegal to the N. and E. See JALLOFFS.

The Yaloffs differ from the Mandingoes, (see MANDING,) not only in language, but likewise in complexion and features. Their noses are not so much depressed, nor the lips so protuberant, as among the generality of Africans; and although their skin is of the deepest black, they are considered by the white traders as the most sightly negroes in this part of the continent. They are divided into several independent states or kingdoms; which are frequently at war either with their neighbours, or with one another. In

 their

their manners, superstitions, and government, however, they have a greater resemblance to the Mandingoes than to any other nation; but excel them in the manufacture of cotton cloth, spinning the wool to a finer thread, weaving it in a broader loom, and dyeing it of a better colour. Their language is said to be copious and significant, and is often learnt by Europeans trading to Senegal. Their numerals are as follow:

One - - -	Ween
Two - - -	Yar
Three - - -	Yat
Four - - -	Yanet
Five - - -	Judom
Six - - -	Judom Ween
Seven - - -	Judom Yar
Eight - - -	Judom Yat
Nine - - -	Judom Yanet
Ten - - -	Fook
Eleven - - -	Fookang Ween, &c.

Park's Travels, vol. i.

In connection with this brief account of the Yaloffs, we cannot forbear mentioning an anecdote that redounds very much to the honour of Damel, their king. On occasion of a war between Damel and Abdulkader, king of Foota Torra, a country to the W. of Bondon, the latter inflamed with zeal for propagating his religion, sent an ambassador to Damel, accompanied by two of the principal Bashreens, who carried each a knife, fixed on the top of a long pole. When they obtained admission into the presence of Damel, they announced the object of their embassy in the following singular manner:—"With this knife," said the ambassador, "Abdulkader will condescend to shave the head of Damel, if Damel will embrace the Mahometan faith; and with this other knife, Abdulkader will cut the throat of Damel, if Damel refuses to embrace it—take your choice." Damel coolly replied, that he had no choice to make; he neither chose to have his head shaved, nor his throat cut: and with this answer the ambassador was civilly dismissed.

Abdulkader with a powerful army invaded Damel's country. The inhabitants of the towns and villages filled up their wells, destroyed their provisions, carried off their effects, and abandoned their dwellings as he approached. Thus he was led on from place to place, until he had advanced three days' journey into the country of the Yaloffs. Several of his men had died with fatigue and hunger by the way. This led him to direct his march to a watering-place in the woods, where his men, having allayed their thirst, lay down, overcome with fatigue, to sleep among the bushes. In this situation, they were attacked by Damel before day-break, and completely routed. Many were killed, and a greater number taken prisoners. Among the latter was Abdulkader himself, who was led, as a miserable captive, into the presence of Damel. The behaviour of Damel on this occasion is celebrated, in terms and sounds of the highest approbation, by the singing men. When his royal prisoner was brought before him in irons, and thrown upon the ground, the magnanimous Damel, instead of setting his foot upon his neck, and stabbing him with his spear, according to the custom in such cases, addressed him in the following manner:—"Abdulkader, answer me this question. If the chance of war had placed me in your situation, and you in mine, how would you have treated me?" "I would have thrust my spear into your heart," returned Abdulkader with great firmness; "and I know that a similar fate awaits me." "Not so," said Damel; "my spear is indeed red with the blood of your subjects killed in battle, and I could now give it a deeper stain by dipping it in your own: but this would not build up my towns, nor bring to life the thousands who fell in the woods. I will not therefore kill you in cold blood; but I will retain you as my slave, until I perceive that your presence in your own kingdom will be no longer dangerous to your neighbours; and then I will consider of the proper way of disposing of you." Abdulkader was accordingly retained, and worked as a slave for three months; at the end of which period, Damel listened to the solicitations of the inhabitants of Foota Torra, and restored to them their king.

YALOVA, a town of Natolia, on the sea of Marmora, once the residence of Dioclesian; 30 miles N. of Brusa.

YALUTOROVSK, a town of Russia, in the government of Tobolsk, on the river Tobol; 108 miles S.W. of Tobolsk. N. lat. 56° 8'. E. long. 66° 32'.

YAM, in *Botany*, a large fleshy root, eatable when boiled or roasted, of which there are several species, all natives of tropical climates, and highly useful to voyagers, as they will, like potatoes, keep for a considerable time without spoiling. See DIOSCOREA.

YAM, in *Geography*. See JAMEZ.

YAMA, in *Hindoo Mythology*, is the god of the infernal regions, corresponding with the Pluto of western heathens. Yama is a very important deity: his name is of perpetual recurrence in the sacrificial ceremonies of the Hindoos; oblations and invocations to him forming a portion of many of those ceremonies. The Hindoos, as is explained under our article MARUT, have assigned regents or guardian deities to each of the cardinal and intermediate points of the world. Yama is regent of the south, or lower world, in which the Hindoos place the infernal regions; this corresponding with the Grecian Pluto or Minos. Under our article MENU, the great law-giver of that name is supposed to have been the same person as the Minos of antiquity. Yama has many names; and in his character and functions is found related to many important personages of sacred and profane history. Among his names are, *Dherma-raja*, or king of justice; *Pitripeti*, lord of the Pitris, or patriarchs (see PITRIS); and *Mritu*, meaning death; a name also of *Kala*, or *Siva*. (See those articles.) *Susan-yama*, and *Vaivaswata-yama*, are others of his names, derived, it is said, the first from a term denoting comeliness or beauty, the other from his solar origin; Yama being of the race of the sun, of which some explanation will be found under our article SURYAVANSA. He is also named *Sradha-deva*, or lord of the obsequies, in honour of deceased ancestors, of which a copious account is given under SRADHA. As well as the Seventh Menu, Yama bears likewise the name of *Satyavrata*. He is also named *Adhumbara*; this name is said to be derived from a species of wood, by the attrition of which fire is produced, wherewith to light the pile on which funeral obsequies are performed to Yama. Every thing connected with the important element of fire is peculiarly mystical with the Hindoos. Touching the sacrificial and other fires, the reader will find many particulars under our articles PAVAKA, SAGNIKA, SAMI, and others thence referred to. *Anheka* is another name of Yama; it means *death*, or the *destroyer*: thus the compound *Kal-anheka-yama* is Yama, the destroyer of Kal or Time, a personification of great boldness and extent. *Kal* is also a name of Yama. (See KAL.) Yama has other compound names, meaning the slayer of all beings, king of deities, reducer of all things to ashes, the dark-blue deity, of wolf-like

like belly, the variegated being, the wonderful inflictor of pains, &c.

His abode is in the infernal city of Yamapur, whither the Hindoos believe that a departed soul immediately repairs; and receiving a just sentence, ascends to Swerga, the first heaven, or descends to Nareka, the snaky hell; or is returned to earth, according to its merits or demerits, where it assumes the form of some animal, unless its offences had been such as deserved condemnation to a vegetable or even to a mineral prison. This extensive theory of transmigration is of a very poetical tendency, affording great scope for the imagination, which the mystical and enthusiastic turn of Hindoo metaphysicians or theologians has amply indulged in.

Mr. Wilford believes Yama to be the same with Serapis; deriving the latter from a Sanskrit term, implying thirst of blood. In the Puranas, Yama is described as attended by two dogs, named Serbura and Syama; the first name signifies *varied*, and it has other appellations meaning *stained* or *spotted*. When we add that it was also called *Tri-siras*, or the three-headed, little doubt can be entertained of its being the same with the Cerberus of the Greeks. *Syama* means *black*. See SERBURA, SYAMA, and TRI-SIRAS.

As Dherma Raja, or the king of justice, Yama is described in the Puranas as having two countenances. "One, called his divine countenance, is mild and benevolent; and those only see it who abound in virtue. In this form, he is called an emanation of Vishnu. He is attended by a servant named Karmala, who conducts the righteous on self-moving cars into the presence of their judge. His other countenance or form is more especially named Yama. He is then depicted with large teeth and a monstrous body, and is thus seen only by the wicked. His attendant is named Kashmala, who drags the wicked with ropes round their necks over rugged paths; and at the command of Yama some are beaten, some cut to pieces, some devoured by monsters, and thrown headlong into hell. He is unmerciful, hard is his heart, and every one trembles at his sight."

Yama is the name of a celebrated legislator, whose enactments are still venerated by the Hindoos. For his profound knowledge and justice, he is said to have been made the judge of departed spirits.

In the seeming contradictions of mythologists, Yama is found to be identified, or nearly so, with both *Siva* and *Vishnu*, (see those articles,) as well as with Menu, Kala, and others. This may be reconciled, as in the mythology of Greece, by recollecting that almost all the deities melt into one. Proserpine or Hecate is given to Pluto as a help-mate, being but another form of Diana. Thus Yama has a form of Parvati assigned him, under the name and character of Pataladevi, or goddess of the infernal regions. (See PATALADEVI.) In heaven Diana is Luna, and Parvati is Swardevi, or queen of heaven. On earth they are distinguished by the names of Diana and Bhudevi, the latter meaning goddess of the earth. These similarities or coincidences could be carried to a great extent.

Some of the ceremonies still in use as propitiating Yama, or his consort *Sakti*, (which see,) have been found by sir W. Jones and others, as strikingly resembling those of the Eleusinean goddess; and there can be no doubt but the investigation of the mythological fables of the Hindoos has thrown great light, and may throw still greater, on many obscure and unintelligible passages of our ancient poets of Europe.

We do not find any direct representation of Yama, or any minute description of his person and attributes, in the mythological works before the public; nor many particulars of his family. We have already noticed him as the offspring of the sun; this he shares in common with several other of the heroic personages of the Hindoos. Yama is indeed one of the many names of Surya, or the sun. The river Yamuna, or Jumna, or rather perhaps the damsel who was poetically metamorphosed into that interesting stream, is fabled as the twin sister of Yama. She is poetically called the "blue daughter of the sun." Days are especially set apart for certain ceremonies to their honour. On one, Yamuna is said to have entertained her brother; and the remembrance of it is preserved in an existing usage of Hindoo young ladies feasting and making their brothers presents on its anniversary. In the Rig-veda (see VEDA), a dialogue is given, in which Yama endeavours to seduce his beauteous sister: but his base offers are rejected by her with virtuous expostulation. In some accounts, a divinity named Swadha is described as the goddess of funeral obsequies; and as such we should expect to find her closely allied to Yama, but know little of the relationship. We have noticed her under the article SWADHA. Several other of our articles contain some particulars of Yama. See KASYA, KRITANTA, SRADHADEVA, TAPAS, and VAIVASWAT.

YAMAMAK, in *Geography*. See JAMAMA.

YAMANCHALINSKOI, a town of Russia, in the government of Caucasus, on the Ural; 20 miles N. of Guriev.

YAMASCA, a river of Canada, which runs into the St. Laurence, N. lat. 46°. W. long. 72° 45′.

YAMASCO, a town of Canada, at the conflux of the Yamasca with the St. Laurence.

YAMBLAK, one of the *Aleutian islands*; which see.

YAMBO. See JAMBO.

YAMBURG, a town of Russia, in the government of Petersburg, on the Luga. The cloth manufactory at this place was instituted by Catharine II., presently after her accession to the throne: it contains 36 looms, and employs 600 persons. The cloths are sold at St. Petersburg at a low price; 20 miles E. of Narva. N. lat. 59° 15′. E. long. 28° 40′.

YAMEOS, a town of South America, in the audience of Quito, on the river Amazons; 36 miles W.S.W. of St. Joachim de Omaguai.

YAMIMKA, a river of Russia, which rises in the government of Tobolsk, and runs into the Irtisch, 14 miles S.S.W. of Kozlovo.

YAMINA, a town of Africa, in the kingdom of Bambarra, near the Niger. This town, according to Mr. Park, was large, covering the same extent of ground as Sansanding; but having been invaded and plundered a few years since by the king of Kaarta, it was, when he was there, half in ruins. N. lat. 13° 46′. W. long. 3° 50′.

YAMON BAY, a bay on the north coast of the island of Luçon. N. lat. 14° 21′. E. long. 122° 37′.

YAMSCHEVSKAIA, a fort of Russia, in the government of Kolivan, on the Irtisch. N. lat. 51° 55′. E. long. 77° 50′.

YAMSKAIA, a gulf of Russia, in the Penzinskoi sea, between Cape Piliatchin and the continent. N. lat. 60° 20′. E. long. 154° 14′.

YAMSKOI, a town of Russia, near the gulf of Yamskaia; 2500 miles E. of Tobolsk. N. lat. 60° 12′. E. long. 153° 34′.

YAMUMINTI, in *Hindoo Mythology*, the name of one of of the wives of the amorous Hindoo deity Krifhna. Her name feldom occurs.

YAMUNA, in *Geography*, a river of India, which takes its rife, as is fuppofed, in the great range of mountains called Himalaya. Its fource has not been accurately explored, but it probably is not more remote than that of the Ganges, which rifes in the fouthern part of that range. The Yamuna flows through the province of Srinagara, or Serinagur, in a foutherly courfe, nearly parallel with the Ganges, approaching its fifter ftream to within forty miles, at the village of Garudavara (Gurudwar), in N. lat. 30° 22′; it is then of nearly equal width. The Yamuna enters Hindooftan Proper, in the province of Delhi, varying its diftance from eighty to fifty miles from the Ganges. The country between them is called Dooab, a word meaning two waters, or watered by two rivers. It is a very fertile diftrict. The rivers approximate and join at Allahabad, an important fortrefs and military ftation under the Bengal government, when the Yamuna, little inferior in magnitude, has its name and waters abforbed in the more celebrated ftream. Its length, of courfe under its own name, is eftimated at about nine hundred miles.

For many miles of its courfe, the Yamuna, or Jumna, as it is more properly called, was confidered a boundary to the Britifh territories, dividing them from the poffeffions of the Mahrattas. But from its fhallownefs, being fordable in many places in the dry feafon, it was not an important military barrier; and for the fame reafon is of lefs confequence for the operations of commerce.

The confluence of any two rivers is viewed with holy refpect by Hindoos,—of thefe two grand ftreams more particularly. To heighten the myfticifm, (any *ternary* connection being ftill more deeply venerated,) it is feigned that a third river, the Sarafwaty, joins the other two by a fubterranean communication at Allahabad. Frequent allufion is made to this occult union by mythological poets, who teach that thefe three rivers are terrene manifeftations of the three great goddeffes, Parvati, Lakfhmi, and Sarafwati; the Sakti, as they are called, or active energies of their refpective lords, Siva, Vifhnu, and Brahma, who compofe the Hindoo triad of divinity. Of thefe perfonages fufficient will be found in the articles given under their feveral names in this work. The fable of the "three plaited locks," as this fuppofed union of thefe rivers is poetically called, often occurs in the writings of the Hindoos: it is noticed in our articles JUNCTIONS, TRIVENI, and ZENNAR. Under SUICIDE, an account is given of the fuppofed pronenefs of the Hindoos to this crime. At the confluence now under our notice, it not only lofes its fin, but affumes a meritorious form. Of this, fee more under SUTTEE.

The river goddefs Yamuna is made by mythologifts to be the fame with Lakfhmi, confort of Vifhnu, and twin fifter of Yama, the judge of departed fpirits, and ruler of the infernal regions. Of thefe perfonages fufficient occurs under their refpective names.

YAMUTHA, one of the Aleutian iflands. N. lat. 53° 40′. E. long. 180° 29′.

YAMYA KONDA, a town of Africa, in the kingdom of Yani.

YAMYAMA KUNDA, a town of Africa, in the kingdom of Tomani.

YANA, a river of Ruffia, which rifes in a lake, fituated in lat. 63° 40′, long. 131° 14′, and running due north, being fupplied by many fmall ftreams, empties itfelf in the Frozen fea, N. lat. 71° 25′. E. long. 131° 16′. At its difcharge it forms five confiderable rivers, which iffue in a capacious bay.

YANAM, a town of Hindooftan, in the circar of Rajamundry; 28 miles S.E. of Rajamundry.

YANATONG, a town of Burmah; 40 miles S. of Mellone.

YANAUCA, a fmall ifland at the mouth of the river of the Amazons; 10 miles N. of Caviana.

YANDABOO, a town of Birmah, on the Irawaddy, remarkable for its manufacture of earthenware; 70 miles W.S.W. of Ava.

YANDINSKOI, a town of Ruffia, in the government of Irkutfk, on the Angara; 160 miles N.N.W. of Irkutfk. N. lat. 54° 30′. E. long. 103° 20′.

YANFONG, a town of Corea; 40 miles E.S.E. of Ou-tchuen.

YANG, a town of Corea; 13 miles E. of King-ki-tao.

YANGBONRAW, a town of Pegu; 60 miles S. of Lundfey.

YANG-CONG, a river of China, which runs into the Kincha river, near Lo-choui-tong.

YANG-HO, a river of China, which joins the San-camho, N. lat. 40° 23′. E. long. 112° 49′.

YANG-KIN, a town of the kingdom of Corea; 15 miles S.E. of King-ki-tao.

YANG-LI, a city of China, of the fecond rank; 1157 miles S.S.W. of Peking. N. lat. 22° 54′. E. long. 106° 35′.

YANG-TCHEN, a town of Corea, in Tchufin; 150 miles S.S.W. of King-ki-tao. N. lat. 35° 19′. E. long. 125° 14′.

YANG-TCHEOU, a city of China, of the firft rank, in Kiang-nan, fituated on the bank of the royal canal, which extends from the Ta-kiang northwards to the river Hoang-ho, or the Yellow river: it carries on a great trade in all manner of Chinefe works, and is rendered extremely populous, chiefly by the fale and diftribution of the falt that is made on the fea-coafts of this jurifdiction and parts adjoining, and which is afterwards carried along fmall canals made for this purpofe, which end in communication with the great canal; 485 miles S.S.E. of Peking. N. lat. 32° 26′. E. long. 118° 54′.

YANG-TCHUEN, a town of Corea; 35 miles W.S.W. of King-ki-tao.

YANG-TE′, a town of Corea; 84 miles E. of Hantcheou.

YANG-TSE-KIANG, a river of Afia, which rifes in the mountains of Thibet, and after croffing the empire of China, from eaft to weft, empties itfelf into the fea, 120 miles E. from Nan-king. This river changes its name almoft in every province through which it paffes. See KINCHA.

The Yang-tfe-kiang may be confidered as equalling, if not exceeding in fize, the YELLOW *River* (which fee). The fources of both thefe rivers are in the fame range of mountains, and they approach one another in one part within a few miles. The Yang-tfe-kiang, according to Mr. Barrow's ftatement, confifts of two diftinct branches, which feparating from each other about eighty miles, flow in a parallel direction to the fouthward for the fpace of 70 miles, and then unite between the 26th and 27th degrees of N. latitude, juft at the boundaries of the two provinces of Yunnan and Sechuen. Then ftriking off to the N.E. directly through the latter of thefe provinces, collecting the waters of the numerous rivers that defcend towards it from that and another province called Quee-choo, it continues in this direction about 600 miles, and then enters the province of Hoo-quang, in the

31ſt degree of N. latitude. Through this province it takes a ſerpentine courſe, and receives the waters of ſeveral lakes, with which this part of the country abounds. Leaving Hoo-quang, it paſſes between the province of Ho-nan and Kiang-ſee, and with a little inclination from the E. towards the N., its copious ſtream glides ſmoothly through the province of Kiang-nan, and is diſembogued into the ſea, which bounds China to the E. in the 32d degree of N. latitude. The diſtance from thence to Hoo-quang is about 800 miles, which makes the whole length of the river about 2200 miles. The current, where the yachts of lord Macartney's embaſſy paſſed it, did not exceed in the ſtrongeſt part two miles; but it was much deeper than the Yellow river. There theſe two great Chineſe rivers, taking their ſources in the ſame mountains, paſſing almoſt cloſe to each other in a particular ſpot, ſeparating afterwards from each other to the diſtance of 15 degrees of latitude, finally diſcharge themſelves into the ſame ſea, within two degrees of each other; comprehending within their graſp a tract of land of above 1000 miles in length, which they contribute greatly to fertilize and enrich, though by extraordinary accidents occaſioning unuſual torrents, they may do injury in particular inſtances. This tract includes the principal portion of the Chineſe empire in ancient times; and lies in that part of the temperate zone, which in Europe, as well as in Aſia, has been the ſcene where the moſt celebrated characters have exiſted, and the moſt brilliant actions been performed, which hiſtory has tranſmitted to poſterity. When the gentlemen of the embaſſy had croſſed the Yang-tſe-kiang, they found that, inſtead of a flat country, lakes, and ſwamps, the ground roſe gradually from the margin of the river, enriched with various kinds and tints of culture, interſperſed with trees, temples, and pagodas. In the river were iſlands ſkirted with ſhrubbery, and rocks riſing abruptly from the ſurface of the water. The waves rolled like thoſe at ſea, and porpoiſes are ſaid to be ſometimes ſeen leaping amongſt them: ſeveral junks were lying at anchor. In the middle of the river is the iſland called "Chin-ſhan," (which ſee.) The ground to the ſouthward of the river gradually roſe to ſuch a height, that it was found neceſſary to cut down the earth in ſome parts to the depth of near 80 feet, in order to find a level for the paſſage of the canal. The land in this neighbourhood is chiefly cultivated with that particular ſpecies or variety of the cotton-ſhrub that produces the cloth uſually called Nankeens in Europe. The down enveloping the ſeed, or cotton-wool, is whole in the common plant; but in that growing in the province of Kiang-nan, of which the city of Nan-kin is the capital, the down is of the ſame yellow tinge which it preſerves when ſpun and woven into cloth. The colour, as well as the ſuperior quality of this ſubſtance in Kiang-nan, was ſuppoſed to be owing to the particular nature of the ſoil; and it is aſſerted, that the ſeeds of the Nankeen cotton degenerate in both particulars when tranſplanted to another province, however little different in its climate. Lord Macartney's Embaſſy, vol. ii.

YANG-TSI, a town of Corea; 30 miles S. of King-ki-tao.

YANI, a kingdom of Africa, ſituated to the eaſt of Burſali, and divided into Upper and Lower, on the north ſide of the river Gambia. See PISANIA.

YANIMAREW, a town of Africa, in the Lower Yani.

YANIMAZCU, a town of Africa, in the kingdom of Yani. N. lat. 13° 40'. W. long. 14° 1'.

YANKEON, a mountain of Thibet; 30 miles N. of Zuenga.

YANKJA, a town of Aſſyria, near the Tigris, and not far from Bagdad. This place and alſo Doueſlla are ſmall ſtraggling towns, every houſe being ſurrounded by a ſeparate mud-wall.

YANTAC, a town of Thibet; 28 miles S.W. of Harachar.

YAN-TCHIN, or VAN-TCHIN, a city of China, of the ſecond rank, in Quang-ſi; 1177 miles S.S.W. of Peking. N. lat. 23° 1'. E. long. 106° 51'.

YAN-TINCOU, a town of Thibet; 75 miles E.N.E. of Pa.

YANTRA, a word denoting a myſtical figure among the Hindoos; alſo a mathematical inſtrument uſed in any ſcience or art of an occult nature. An inſtrument uſed in aſtronomical obſervations, called Golayantra, or the ſpheric yantra, is deſcribed in the ninth volume of the Aſiatic Reſearches, art. 6, as ſimilar to our armillary ſphere. The article now referred to by Mr. Colebrooke, preſident of the Aſiatic Society of Calcutta, is very curious and important. The Hindoos, being ſo prone to myſticiſm, can fancy various wiſhes in occult figures and practices. Figures ſimilar to the magic ſquares, abracadabra, &c. of weſtern wizards, are ſtill uſed and venerated by the knaves and fools of Aſia; theſe are generally called yantra: as are peculiar figures or hieroglyphics, appropriated to certain Hindoo deities, whoſe followers or ſectaries mark their foreheads therewith, and deem them of a ſanctifying tendency. The nature of theſe various yantras, with ſuitable inſtructions and warnings as to their formation, uſes, and purpoſes, are taught in a Sanſkrit book, entitled "Agamaſaſtra, or Occult Science." It may be noticed in paſſing, that the word Agama, meaning in the Sanſkrit tongue hidden, myſterious, ſecret, &c. ſeems to have had in various languages and regions a ſimilar meaning, as to which it may ſuffice to refer to our articles OGHAM, O'M, and SHASTAH.

Combined with and related to the yantra, are certain imprecations, incantations, charms, philtres, &c. called Mantra and Tantra, which occur frequently in Hindoo writings, and of which ſome notice is taken in this work under thoſe words.

YAO, in *Geography*, a city of China, of the ſecond rank, in Chen-ſi; 485 miles S.W. of Peking. N. lat. 35° 54'. E. long. 108° 31'.

YAO-NGAN, or YAO-GAN, a city of China, of the firſt rank, in Yun-nan. The territory of this city is conſiderable, although it contains but two cities, one of the ſecond order, and the other of the third. It is intermixed with mountains, which are covered with fine foreſts and fruitful valleys, and produces abundance of muſk: near the city there is a well of ſalt water, from which they make very white ſalt; 1175 miles S.W. of Peking. N. lat. 25° 33'. E. long. 101°.

YAO-TCHEOU, a town of Chineſe Tartary; 380 miles E.N.E. of Peking. N. lat. 40° 43'. E. long. 122° 14'.

YAO-TCHEOU, or YAO-CHOO-FOO, a city of China, of the firſt rank, in Kiang-ſi, ſituated on the S.E. bank of the lake Po-yang. It has ſeven towns of the third rank in its juriſdiction. In this town is a large manufacture of porcelain, from whence, as well as from King-te-ching, it is ſent to Nem-chang-foo; 670 miles S. of Peking. N. lat. 29°. E. long. 116° 14'.

YAP, among the *Hindoos*, is a ſilent meditation on the names, attributes, and powers of the Deity. Great merit is aſcribed to this ſpecies of devotion, which is otherwiſe, though we apprehend leſs correctly, ſpelled *jap;* under which article we find we have ſufficiently deſcribed it, although reference has occaſionally been made to this article;

ticle; which is therefore thus given, chiefly to point to the more lengthened defcription.

YAP *Ifland*, in *Geography*, one of the group called *Carolines*; which fee. In this ifland, a kind of crocodile is the object of their worfhip. Here are alfo a number of magicians, who impofe upon the credulity of the inhabitants, by leading them to believe, that they have communication with the evil fpirit; and by this impofition, they commit with impunity all forts of crimes. They procure maladies and even death to thofe whom it is their intereft to deftroy.

YAPANDAIN, a town of the empire of Birmah, on the Irawaddy; 40 miles W. of Ava.

YAPIZLAGA, or LLANOS DE MANSO, a province of South America, in the vice-royalty of Buenos Ayres, of great extent, fituated to the fouth of the Vermejo river. This country was formerly called Llanos de Manfo, or the Plains of Manfo, from a captain of that name, who in 1556 undertook to build a town: but when he thought himfelf in perfect fecurity, he, with all his attendants, was murdered by the Indians; of whom there are feveral nations. The country is but little known.

YAPOC, a river of Surinam, which runs into the Atlantic, near Cape Orange.

YAPON, in *Botany*, a fpecies of *ilex*. See HOLLY.

YARACUI, in *Geography*, a river of Venezuela, which runs into the Spanifh Maine, N. lat. 10° 28′. W. long. 68° 40′.

YARANSK, a town of Ruffia, in the government of Viatka; 72 miles S.W. of Viatka. N. lat. 55° 36′. E. long. 48° 34′.

YARAY, a town of Africa, in the kingdom of Kayor; 80 miles S.E. of Amboul.

YARBA, a town of Africa, and capital of a country, called Yarra; 430 miles S.W. of Tombuctoo.

YARD, *Virga*, a long meafure, ufed in England and Spain; chiefly to meafure cloth, fluffs, &c.

The Englifh yard contains three feet. It was firft fettled by Henry I. from the length of his own arm. See MEASURE.

The Englifh yard is juft feven-ninths of the Paris ell; fo that nine yards make feven ells. To reduce ells, therefore, into yards, fay, If feven ells give nine yards, how many yards will the given number of ells give?

Yards are converted into ells Flemifh, by adding a third part; into ells Englifh, by fubtracting a fifth part; or multiplying by 8, and cafting off the right-hand figure. Ells Englifh are converted into yards, by adding a fourth. To turn ells Flemifh into yards, fubtract one quarter.

The Spanifh vara, or yard, chiefly ufed at Seville, is, in fome places, called *barra*. It contains feven twenty-fourths of the Paris ell; fo that feventeen ells make twenty-four Spanifh yards.

YARD, in *Anatomy*, the penis, or virile member; ferving for the evacuating of the urine and feed.

It is alfo the common name for the penis in moft animals.

YARD *of Land*, *Virgata Terræ*, or *Virga Terræ*, is a certain quantity of land, but that various, according to the place. At Wimbledon, in Surrey, it is only 15 acres; but in moft other counties it contains 20, in fome 24, in fome 30, and in others 40 or 45 acres.

"Virgata terræ continet 24 acras; et 4 virgatæ conftituunt unam hidam, et quinque hidæ conftituunt feodum militare." MS. Abbat. Malmef. See CARRUCATE, HIDE, and KNIGHT'*s Fee*.

YARD, in *Agriculture*. See FARM-*Yard*.

YARD-*Manure*. See FARM-*Yard*, COMPOST, DUNG, MANURE, and MANURING.

In order to prevent the vegetation of weeds in this manure, the manure is turned up in the yard in rows when it is about two feet in depth, leaving proper room between each row to put the frefh dung from the ftables, cowhoufes, and hog-fties. After the manure thus thrown up has got a fair heat, it is again turned over, which moftly deftroys or prevents the weeds from growing, when the manure is ready for being taken out upon the land.

The ufes and powers of the long and fhort yard dungy manure are very different in different ftates of it.

The opinions and practice of the farmers in the county of Norfolk, in regard to the ufe of long or fhort dung or yard manure, are much divided. Comparative trials are wanting to fully afcertain this important point.

It is, however, a prevailing idea in the above county, that long dung is beft for ftrong land, and fhort for light foils; but that the general practice is that of fpreading fhort in all cafes.

In Effex, too, it is now the practice of many enlightened farmers to make ufe of long dung or yard manure with great advantage; though what may be faid to be the general cuftom of the diftrict is to clamp and employ that which is in the fhort ftate. Some farmers there, however, do not like to fee their yard-manure too long in the heaps, as there is lofs in turning it. In the practice of dunging for wheat, it was there obferved, on long and extenfive experience, that it fhould be *long frefh* dung, as the fuperiority of fuch dung to that which the farmers fo generally prefer, fuch as has been moved and turned over until quite rotten, was, one load of it, worth fix of that of a year old and rotten, as with fuch dung a crop of wheat is always certain.

In Oxfordfhire, and many other counties, the fame is the cafe with many farmers, though the common practice is to mine and turn yard-manure until it is reduced into the fhort ftate, and then to apply it to the land.

On this very interefting point of management, the writer of a late work on Agricultural Chemiftry has fuggefted, that a flight incipient fermentation is undoubtedly of ufe in the heaps of this fort of manure, as by means of it a difpofition is brought on in the woody fibre to decay and diffolve, when it is carried to the land, or ploughed into the foil; and that this fort of fibre is always in great excefs in the refufe of the farm, efpecially that of the yards: but that too great a degree of fermentation is very prejudicial to fuch mixed yard-manure, when in the heaps; and that it is better that there fhould be no fermentation at all before the manure is ufed, than that it fhould be carried too far, the excefs of fermentation tending to deftroy and diffipate the moft ufeful part of the manure.

During the violent fermentation which is neceffary for reducing farm-yard manure to the ftate in which it is termed *fhort muck* or *dung*, not only a large quantity of fluid, but likewife of gafeous material is loft; infomuch that the dung or manure is reduced one-half, two-thirds, or more of its weight; and that the principal claftic matter difengaged is carbonic acid with fome ammonia; both of which, if retained by the moifture in the foil, would be capable of becoming an ufeful food or nourifhment of plants.

Befides the diffipation of gafeous matter when fermentation is pufhed to the extreme, as in the cafe of fhort dung, there is another difadvantage attending it in the lofs of *heat*, which, if excited in the foil, is ufeful in promoting the germination of the feed, and in affifting the plant in the firft ftage of its growth, when it is moft feeble and moft liable to difeafe: and the fermentation of the manure in the foil muft be particularly favourable to the wheat-crop, in preferving a genial temperature beneath the furface late in the autumn and during winter. Moreover, it is a general principle in chemiftry, that in all cafes of decompofition, fubftances combine much more readily at the moment or time of their difengagement, than after they have been perfectly formed: and in fermentation beneath the foil the fluid matter produced is applied inftantly, even while it is warm, to the organs of the plant, and confequently is more likely to be efficient, than in fhort dung or manure that has gone through the procefs; and of which all the principles have entered into new combinations.

The writings of fcientific cultivators allege many arguments and facts which favour the application of yard-dung in a frefh or long ftate; and it is fuppofed, that perhaps there is no fubject of inveftigation in which there is fuch an union of theoretical and practical evidence and proof.

The main objection againft the ufe of flightly fermented or long yard-dung or manure is, that weeds rife more luxuriantly and in greater numbers where it is had recourfe to: but though feeds thus carried out will certainly fprout, it is but feldom that this can be the cafe to any extent; and if the land be not clean of weeds, any kind of manure, long or fhort, fermented or unfermented, will caufe their rapid growth.

The application of yard-dung, or manure in the long ftate, is highly advantageous with regard to the quantity or extent of the improvement which may be produced, as nearly four loads of it are moftly required to form one of the fhort kind.

There is another queftion connected with this fubject, which is not of lefs intereft or importance to the farmer to have decided, which is that of the fuperior advantage of confuming the ftraw of the farm by animals, or of having it littered and trodden into dung or manure in the yards. Many of the moft enlightened farmers in the firft of the above counties, the writer of the account of the agriculture of it fays, are againft the former of thefe practices, though a large part of them is in the cuftom of it: and they have frequently, too, recourfe to the method of buying oil-cake, even often at a lofs, in order that their ftraw may be trodden into dung or manure by fattening beafts, which is an excellent management of the yard kind.

Yard-*Fallen*, a term ufed among our farriers to exprefs a malady to which horfes are fometimes fubject, which is the hanging down of the penis from its fheath between the legs, the creature not being able to draw it up again. This is caufed by weaknefs of the peculiar mufcles which fhould act in the drawing up; and proceeds fometimes from a violent flip or ftrain, fometimes from a blow on the back, and fometimes from extreme wearinefs in long journeys.

The method of curing this is, firft to wafh it with oil of rofes, after this with warm white wine, and finally, to anoint it with a mixture of oil of rofes and honey; it is then to be returned into its place, and kept from falling down again by a little canvas bolfter. It is to be thus dreffed once in twenty-four hours, till the cure is perfected.

There are fome other diftemperatures to which this part is fubject in a horfe, as the being foul at the end, fo that the creature voids his urine in the fheath; in this cafe, the method of cure is to draw out the penis, and cleanfe the end of it from any foulnefs that may be found there; then it is to be wafhed with butter and white wine vinegar melted together: fometimes there is a difcharge of yellow ftinking matter from the penis; this is peculiar to ftone-horfes, and principally affects them after the time of their covering of mares.

This running is attended with a fwelling of the penis, and with a pain in voiding the urine; the creature alfo finds a difficulty in drawing up the penis into the fheath.

The method of cure is, to diffolve in a pint of white wine an ounce of roach-alum by boiling; and four or five times a day this is to be ufed, injecting it up into the yard with a fyringe, blood-warm. This will prove a certain cure.

Yard-*Foul*, the filthy, furred ftate of the yard and fheath in animals of the horfe kind, which fometimes produces difeafe.

It is removed by well wafhing and cleaning the parts, by the free ufe of foft-foap and water.

Yard, *Mattering of*, a difeafe in the yards of horfes, produced by different caufes, in which matter is formed. It is removed by the ufe of cooling wafhes, and keeping the parts clean and perfectly free from dirt and naftinefs.

Yard, *Sheep*. See Sheep-*Yard* and Standing *Fold*.

Yard, *Stable*. See Stable.

Yard, *Stack*. See Farm-*Yard*, Stack, and Stack-*Yard*.

Yard, *Straw*. See Straw-*Yard*.

Yards, in a *Ship*, are long cylindrical pieces of fir-timber, fufpended to the mafts of fhips, &c. to extend the fails to the wind.

All yards are either fquare or latteen; the former are fufpended athwart the mafts by the flings, at right angles, and the latter at one-third their length, obliquely.

The proportional lengths of yards are as follow, particularly in the royal navy:—Main-yard, eight-ninths the length of the main-maft; fore-yard, feven-eighths of the main-yard; mizen-yard, fix-fevenths of the main-yard; main-topfail-yard, five-fevenths of the main-yard; fore-topfail-yard, feven-eighths of the main-topfail-yard; mizen-topfail-yard, two-thirds of the main-topfail-yard; topgallant-yards to 74-gun fhips, two-thirds all under three-fifths of their topfail-yards; royal-yards, half of the topfail-yards; crofs-jack-yard and fpritfail-yard, the fame as the fore-topfail-yard; fpritfail-topfail-yard and driver-yard, the fame as the fore-topgallant-yard; and the ftudding-fail-yards, four-fevenths of their booms.

Proportion of diameters of main and fore yards at the flings is one-quarter of an inch to every foot in their length; mizen-yard, two-thirds the diameter of the main-yard; topfail-yards, five-eighths of an inch to every yard in the length; topgallant-yards, three-fifths of an inch to every yard in the length; royal-yards, half the diameter of the topfail-yards; fpritfail-yard and crofs-jack-yard, the fame diameter as the fore-topfail-yard; fpritfail-topfail-yard and driver-yard, the fame diameter as the fore-topgallant-yard; and the ftudding-fail-yards, one inch diameter to every five feet in the length.

The fquare yards are of a cylindrical furface the greater part of their length. They taper from the middle, which are called the *flings*, towards the extremities, which are termed the *yard-arms;* and the diftance between the flings and the yard-arms on each fide is divided into quarters, which are diftinguifhed into the firft, fecond, and third quarters, and yard-arms, which are regularly tapered by the following proportions. The firft quarter, or that next the flings or middle, thirty thirty-ones of the given diameter; the fecond quarter, feven-eighths; the third quarter, feven-tenths; and the arms or ends, three-fevenths. From a middle line ftruck on the tree or fpar the yard is to be made from, half of the feveral dimenfions above is to be fet ſet off, and the yard then ſawn to its ſiding; it is then canted, and a middle line ſtruck on one of thoſe ſides, and the middle and the quarters ſquared up thereon from the middle line on the firſt ſide, and the ſame diameters ſet off as before, then lined and ſawn ſquare to the upper ſide; it is then ſawn eight-ſquare the whole length.

The main and fore yards (*fig.* 17. *Rigging, Plate* II.) are then trimmed ſixteen-ſquare, and rounded from one quarter on each ſide the ſlings to the outer ends, except on the aft-ſide, which muſt remain eight-ſquare two-quarters on each ſide the middle. The whole is then planed fair and ſmooth.

In merchant ſhips they have a ſheave-hole in their arms for the topſail-ſheets, and are left ſquare the length of the ſheave-hole; but this method weakens the lower yards.

Topſail-yards (*fig.* 18. *Rigging, Plate* II.) being trimmed ſixteen-ſquare, are rounded and planed from the firſt quarter on each ſide the middle to their outer ends, and a ſheave-hole cut from their upper ſide, its length within each outer end for the reef-tackles. In ſome merchant ſhips a hole is cut within the cleats for the top-gallant-ſheets, but is better avoided, as it weakens the yard-arms.

Topgallant-yards (*fig.* 19. *Rigging, Plate* II.), royal-yards, croſs-jack-yards, mizen-yards, ſprit and ſprit-topſail-yards, ſtudding-ſail and driver yards, are trimmed eight-ſquare, ſixteen-ſquare, and then rounded and planed fair and ſmooth from end to end throughout the length.

Battening of Yards.—Main and fore yards, main, fore, and mizen topſail-yards, have oak battens nailed on their ſquares nearly the ſame length and breadth, one inch to three-quarters of an inch thick; their ends rounded and ſnaped, and the edges chamfered. The fore-ſide has no battens.

Cleating of Yards.—The ſling-cleats, *a a*, (*fig.* 17. *Rigging, Plate* II.) nailed on the fore-ſide of the main and fore yards, are once and a quarter the given diameter of the yard in length, with a ſhoulder one-third its length; the breadth one-fourth the length; the thickneſs two-thirds the breadth, made of elm, and nailed once the given diameter on each ſide the ſlings.

Stop-cleats, *b*, (*fig.* 17. *Rigging, Plate* II.) are made of oak, and nailed within the arms, on the fore-ſide and aft-ſide of the lower yards, one inch and a half to every yard in their length. Their length half the given diameter of the yard; the breadth one-fourth its length; and its thickneſs two-thirds its breadth. Yards for merchant ſhips have their cleats ſometimes raiſed from the ſolid.

Topſail-yards have ſtop-cleats, nailed on the fore-ſide of the yard, once the given diameter on each ſide of the ſlings. Thoſe within the arms, on the fore and after ſides of the main and fore topſail-yards, three inches to every yard in the length; and mizen topſail-yards, two inches and a quarter.

Topgallant-yards the ſame as topſail-yards.

Royal-yard-cleats are once the diameter on each ſide the middle aſunder, and twice their length within at the arms.

Croſs-jack-yards have ſtop-cleats, nailed on the fore-ſide of the yard, half the diameter on each ſide of the ſlings; thoſe at the arms, one inch and a half within their outer ends to every yard in length, and nailed on the fore and after ſides.

Mizen-yards have ſtop-cleats nailed once the diameter aſunder on the ſtarboard-ſide, and once and a half the given diameter below the middle of the yard: thoſe at the peek or outer end, once the diameter within.

Sprit and ſprit-topſail-yards have ſtop-cleats nailed on their under ſides; the ſpritſail-yard once the diameter on each ſide the ſlings; the ſprit-topſail-yard half the diameter one each ſide: thoſe at the arms one inch and a half within their outer ends to every yard in the length; and they nail on the fore and after ſides contrary to thoſe at the ſlings.

Studding-ſail and driver yards have ſtop-cleats, nailed once the given diameter aſunder, at one-third the length of the yard from the inner end; thoſe at the arms twice their length within.

Boat-yard-cleats are once the given diameter aſunder at the ſlings; ſome in the middle, others one-third from the end, ſuch as lugs, latteen, and ſettees, and the length of the cleat within at the arms.

Yards are fitted at their outer ends for rigging out ſtudding-ſails. Main and fore yards have four boom-irons; one on each of their outer ends, *c*, (*fig.* 17. *Rigging, Plate* II.) the others at one-third the length of the boom within, *d*. The outer boom-iron is compoſed of a ring, a neck, and ſtraps.

The ring, through which the boom ſlides, is of the ſame diameter in the clear as its topmaſt-ſtudding-ſail boom; breadth three-eighths the diameter, and from five-eighths to three-quarters of an inch thick. In one ſide a lignum vitæ roller is fitted, one-third in length the diameter of the boom-ring. The neck is ſquare, and connects the ring to the ſtraps; each neck one inch longer than the diameter of the ring, and one-fourth its length in ſize.

The ſtraps are made one inch and a quarter in length to every three feet of the yard; their breadth once and a half the breadth of the ring; thickneſs at the inner part, three-eighths of an inch: they increaſe in ſubſtance towards the neck, and are made to the ſhape of and let in their thickneſs into the yard-arm. They are bolted, and have two hoops made to the ſize of the yard-arm, one cloſe to the end, and the other near the neck.

Inner boom-irons are made after the ſame proportion as the outer ones, but differ in ſhape. The ſtraps are made to compaſs the yard at one-third the length of the topmaſt-ſtudding-ſail boom within the end, and the ring is ſeparated from the ſtrap by a collar; the upper part of the ring opens with a hinge on one ſide, and the heel of the boom is claſped therein.

Boom-irons fix on the yards thus: the rings are parallel with the axis of the yard, in a ſtraight direction, with a line ſtruck upon the yard, in the middle of the ſquare, between the upper and fore ſide.

Boom-irons, on the yard-arms of ſhips in the merchant ſervice, differ much in ſhape. The ring the boom ſlides through is connected by a collar to a ſquare hoop, that lets on and nails to the yard-arms, they being left ſquare; and ſometimes a round hoop to the ſize of the yard-arms. Others have a ſtraight neck, projecting from ſtraps, with a ſhoulder in the middle of the neck, and the part without left ſquare. The boom-ring has a ſhank on the under part, with a mortiſe that fits the neck, and there faſtened by a ſcrew-nut, or a ſpring-forelock, that goes on the neck next the ring.

Topſail-yards, main and fore, commonly have boom-irons at their outer ends, like the lower yards in merchant ſhips. In the navy they are moſtly fitted with a boom-ring, and a ſprig-eye-bolt driven in the middle of their ends, parallel to its axis; and an iron hoop let in its thickneſs and breadth, and nailed, to prevent ſplitting the yard-arm. Yards that have no inner boom-irons have ſaddles for the heel of the boom.

Topgallant-yards, main and fore, mizen-yards, ſprit and ſprit-topſail-yards, have their arms fitted with a ferrule-hoop and ſprig-eye-bolts, as the topſail-yards.

Mizen-

Mizen-topsail and topgallant yards have hoops like the former let on their outer ends, but no eye-bolts.

Driver-yards have a ſheave-hole cut through their outer end, and a hoop and eye-bolt.

The main and fore yards of large ſhips are ſometimes made of two trees; they have each tree lined, long enough to ſcarf four feet beyond the firſt quarter, next the middle, or ſlings, which is in all five-eighths the length of the yard, adding four feet. The ſcarfs line ſtraight, from each quarter next the middle to one-fourth the ſubſtance at the quarter next the butt, and three-fourths at the quarter next the middle, and haunches to about three inches at the butt. Each tree is then ſawn as before directed, and completed thus: the ſcarf and haunches are trimmed ſtraight, and out of winding on the inſide, and a line ſtruck along the middle, and a chain-coak ſet off, each about two feet four inches long, and one-third the diameter broad; and the butts ſquared acroſs and down the ſides. The coaks are raiſed one inch and a quarter at the butt, and ſunk to the ſame on the other ſide of the middle, towards the arm; the other half is then canted thereon, ſet ſtraight and out of winding, and fayed as the *maſts*, (which ſee, and the *Plate* of *Maſts*,) and bolted together fore and aft through the middle, in the butt of every coak; the heads are to be driven from the thinneſt part of the ſcarf, and clenched on a ring, and the haunches nailed.

The yard is then completed as before directed, and the ſcarfs caulked their length and hooped; one hoop over the butt of each ſcarf, one in the middle of each haunch, and one over every bolt: then a fiſh of fir, two inches thick, and the ſame length and breadth as the ſquare on the aft-ſide, is fayed and nailed cloſe over all the hoops.

Another method of ſcarfing yards together made of two trees, which is the ſtrongeſt, and takes leſs trees than the former, is by providing two trees that will hold the diameter beyond the *fiſhes*, and ſcarf together ſimilar to the former. Then the deficiency of the diameter towards the middle is made good by long fiſhes of fir, from four to ſix inches thick, as the ſize of the yard may require, extending two feet in length at each end beyond the long ſquare on the aft-ſide, and each of ſufficient breadth to form the eight-ſquare on the outſide. The inner ſurfaces of the fiſhes are coaked and fayed cloſe upon the yard, the coak extending near the whole length. The yard is then finiſhed as before directed, and hooped and bolted, as in the *Plate* of *Maſt-making*.

Yard-*Arm* is that half of the yard which is on either ſide the maſt, when it lies athwart the ſhip. See the preceding article.

Yards alſo denote places belonging to the navy, where the ſhips of war, &c. are laid up in harbour. See Dock-*Yards*.

YARDLEY, in *Geography*, a village of Worceſterſhire, which, according to the population return of the year 1811, contained 1918 inhabitants, including 121 families employed in manufactures, and 453 houſes; 7 miles S.E. of Birmingham.

YARE, a river of England, in the county of Norfolk, which riſes about five miles N. from New Buckenham, paſſes by the city of Norwich, and runs into the German ocean near Yarmouth.

Yare. See Segovia *Nueva*.

Yare, among *Sailors*, implies as much as, nimble, ready, quick, expeditious. Hence, *to be yare at the helm*, as ſome ſay, ſignifies to ſet a freſh man at the helm.

YARECA, in *Geography*. See Jareca.

YAREE, a town of Burmah; 40 miles S.W. of Ava.

YARENSK, a town of Ruſſia, in the province of Uſtiug, on the Vitchegda; 92 miles N.E. of Uſtiug. N. lat. 62°. E. long. 47° 50′.

YARI, a town of Braſil, in the government of Para; 60 miles N.E. of Paru.

YARIN, a word uſed by ſome of the chemical writers to expreſs the flos æris.

YARKAN, Yarkand, *Irken*, or *Yarkien*, in *Geography*, a town of Caſhgar, or Little Bucharia, where the grand khan of the Eluth Tartars chiefly reſides. The town is large, and well built of bricks dried in the ſun. The environs are fertile, and the palace of the khan large, but not handſome. In 1400 this town was taken and plundered by Timur Bec; 90 miles S.E. of Caſhgar. N. lat. 38° 13′. E. long. 78° 49′.

Yarkan, or *Yarkand*, ſuggeſted to be the Oechardes of Ptolemy, a river of Aſia, which paſſes by the town of Yarkan, and after a conſiderable courſe runs into lake Lop; 100 miles S. of Tourfan.

YARM, or Yarum, a market-town in the W. diviſion of the liberty of Langbaurgh, in the North Riding of the county of York, England, is ſituated on the banks of the river Tees, 4 miles S. by W. from Stockton, 44 N.N.W. from York, and 237 in the ſame direction from London. In 1811 the houſes in the town and pariſh were 361, and the inhabitants 1431. Here is a neat modern church. A market is held on Thurſday, and fairs on Thurſday before the 5th of April, Holy Thurſday, 2d of Auguſt, and 20th of October. At Yarm was an hoſpital, founded before 1185; alſo a houſe of Black friars, founded about 1271, by the family of Brus or Bruce, both of which were ſuppreſſed by Henry VIII. Over the river Tees at this place is a handſome ſtone bridge, communicating with the county of Durham. The town, formerly more conſiderable than at preſent, ſtill carries on a good trade by water, particularly in corn and lead for the London market. In 1761 the town ſuffered ſeverely by an inundation of the river Tees.—Beauties of England and Wales, Yorkſhire, by J. Bigland, 8vo. Lond. 1812.

YARMOUTH, Great, an important ſea-port, borough, and market-town, in the hundred of Eaſt Flegg, and county of Norfolk, England, is ſituated on the E. coaſt of England, near the mouth of the river Yare, whence it has its name, 22 miles E. from Norwich, and 124 N.E. from London. The number of houſes in the pariſh, according to the returns of 1811, was 3594, and the inhabitants were 17,977. A market is held here on Saturday, and a fair in Eaſter week. The town, which ſends two members to parliament, was incorporated by James I. It is governed by a mayor, recorder, 7 aldermen, 36 common-council-men, a town-clerk, and other inferior officers. In former times, Yarmouth was a member of the Cinque Ports, and by ancient cuſtom appointed bailiffs, who, in conjunction with the magiſtrates of the town, hold a court there during the herring-fair. The corporation poſſeſs alſo the privileges of courts of admiralty and of record. Yarmouth is ſingularly ſituated on a long, narrow, ſandy peninſula, having on the E. the German ocean, and on the W. the river Yare, which, after pointing N.E. towards the ſea, ſuddenly bends round to the S. parallel to the ſhore, and opens into the ſea, two miles below the town. The coaſt near Yarmouth and ſouthward to Loweſtoft is the moſt eaſterly part of Great Britain, Yarmouth church lying in E. long. 1° 45′ from Greenwich.

The firſt mention of this town is in Domeſday-book, which renders it probable, that it had its beginning in the early part of the Anglo-Saxon dynaſty. When the ſand-bank, on which it ſtands, and which, thrown up by the ſea, impeded,

impeded, or at leaſt diverted, the courſe of the Yare, was ſufficiently conſolidated, habitations were formed on it by the fiſhermen who reſorted to the coaſt. By the influx of foreigners for the purchaſe and ſale of fiſh the town increaſed, ſo as to become the moſt conſiderable port on the eaſt coaſt of England. To provide for its ſecurity, Henry III. granted to the inhabitants permiſſion to incloſe the town with a moat and walls; works which, however, do not appear to have been commenced until 1285, the thirteenth year of his ſucceſſor, Edward I. But when war with France broke out in 1545, an additional rampart was thrown up towards the ſea, and further extended in 1587. In the following year, to guard againſt the Spaniſh invaſion, outworks were conſtructed, the ſouth mount was raiſed and planted with cannon, and a boom was laid acroſs the entrance of the harbour. Coeval with the firſt fortification of Yarmouth was probably the caſtle, in the centre of the town. It ſerved for ſome years as a priſon; but in 1621 the whole was demoliſhed. In 1642 the inhabitants of Yarmouth declared for the parliament; but it was only after the independents had gained an aſcendancy in the ſtate that a garriſon was admitted here. During the American war, forts and batteries were conſtructed, and barracks for a conſiderable body of troops were erected for the defence of the place. Indebted for its original exiſtence, and ſubſequent increaſe to the fiſhery, Yarmouth very early poſſeſſed a very numerous ſhipping. In the ſummer of 1310, when Edward II. ordered the ſeveral ports of England to ſend ſhips to Dublin, to convey troops over to Scotland, Yarmouth furniſhed ſix, while even Briſtol and Glouceſter, although ſo conveniently ſituated for that object, furniſhed only two between them. To form a fleet to be employed in the ſiege of Calais, in 1346, under Edward III., Yarmouth ſent out forty-three veſſels, carrying 1095 mariners; a number of men far exceeding thoſe furniſhed by any other port in the kingdom; for London itſelf was called on for only twenty-five veſſels, containing 662 mariners.

In 1797, when men for the navy were required in proportion to the tonnage of each port, Yarmouth was the ninth in order; but according to the Cuſtom-houſe books of 1800 it had advanced to be the eighth, the ſhips of the port being 375, the tonnage 32,957, navigated by 2442 men, while Briſtol poſſeſſed 186 ſhips, carrying 26,193 tons and 1674 men. Yarmouth was early diſtinguiſhed, and ſtill remains unrivalled, for the herring-fiſhery. About 1220 the abbot of St. Alban's purchaſed a large houſe in Yarmouth, "in order to lay up fiſh, eſpecially herrings, which were bought in by his agents at the proper ſeaſon, for the uſe of his abbey." Prior to 1238, the people of the oppoſite coaſt of Europe were in the habit of reſorting to Yarmouth for a ſupply of herrings. Theſe and other recorded facts ſhew that the method of preſerving that fiſh, probably by ſalt, muſt have been known in England more than 200 years before the pretended invention of Beukels in Flanders, from whom *pickling* is ſaid to have had its name. (See HERRING-*Fiſhery*.) The herrings uſually appear on the eaſt coaſt of England about September, when the grand fiſhing ſeaſon commences. The boats fitted out for the fiſhery are decked, and average from forty to fifty tons burthen, with a crew of eleven or twelve men to each. The veſſels, with ſome tons of ſalt on board, proceed from four to twelve leagues out to ſea. Each boat is provided with eighty or a hundred nets, twenty-one yards in length, and eight and a half in depth; all of which, faſtened to a long rope, are let down into the ſea at duſk, and drawn up at day-light. When ſalted, the fiſh are hung up in lofty buildings, and expoſed, with ſmall intermiſſions, for about a month, to the ſmoke of a wood fire, and thus become red-herrings. Two centuries ago the fiſhery was alſo carried on in ſummer; but in the preſent times no herrings are found on the coaſt in that ſeaſon. In the interval of the fiſhery, the boats are employed in catching mackarel and cod. Yarmouth trades very largely in the export of corn and malt, and in the woollen ſtuffs of Norwich. Timber, iron, and hemp, are imported from the Baltic, and ſhip-building is carried on at this place to a conſiderable extent.

The formation and the maintenance of the harbour of Yarmouth have required great exertion, ingenuity, and expence; for the preſent is the ſeventh recorded to have been made, and its yearly charge amounts to about 2000*l*., which ſum is defrayed by duties exacted from goods brought in. The new works were executed by Joas Johnſon, a Dutchman, who had been invited from Holland for the purpoſe. The principal or north pier is in length 265 yards, and the ſouth pier, which is better conſtructed, 340 yards: the extent of the harbour between theſe piers is 1111 yards; and the depth of water, in all ſtates of the tide, being now about twenty-four feet, inſtead of three feet, as was the caſe before the erection of the piers, veſſels can always lie afloat at their moorings. The well-known Yarmouth roads are formed by ranges of ſand-banks, lying out parallel to and at no great diſtance from the ſhore. The channels between the banks, ſome of which are dry at low water, and between them and the ſhore, are in general narrow, but deep enough for ſhips of any ſize. The roads conſequently afford moſt deſirable ſhelter in ſtormy weather, on a tract of coaſt projecting a great way into the German ocean, and peculiarly deſtitute of acceſſible harbours. But the concourſe of ſhipping in this ſtation has, on various occaſions, produced dreadful diſaſters, the veſſels being frequently driven from their anchors, and wrecked on the banks or on the ſhore.

The town of Yarmouth is in form an oblong quadrangle, conſiſting of four principal ſtreets, croſſed at right angles by 156 lanes, called rows, ſo confined in breadth, that for the conveyance of goods through them, the inhabitants have adopted narrow carts, mounted upon low wheels, and drawn by one horſe, the driver ſtanding in the front of the cart. The town is incloſed by a wall on the north, eaſt, and ſouth ſides, in length 2240 yards, which, with the weſt ſide along the river, 2030 yards, make the circuit two miles and 750 yards. Although ſo populous a town, Yarmouth forms but one pariſh, and, until a century ago, had but one church, that of St. Nicholas, which was erected by Herbert Loſinga, biſhop of Norwich, in 1123; but it was greatly enlarged in 1250. It conſiſts of a nave, two aiſles, and a tranſept, and had lately a ſpire 136 feet high, a diſtinguiſhed ſea-mark in the midſt of a long tract of low and dangerous coaſt; but in 1803 it was taken down. The other public buildings of Yarmouth are, the town-hall, a handſome building, with a Tuſcan portico, ſituated near the centre of the quay; the council-room, which alſo ſerves for aſſemblies; the fiſherman's hoſpital, a quadrangle, containing twenty rooms on a floor, each intended for an old fiſherman and his wife; the hoſpital-ſchool for maintaining and clothing thirty boys and twenty girls, at the expence of the corporation; and the charity-ſchool for ſeventy boys and thirty girls, who are clothed and educated. The quay of Yarmouth is juſtly the boaſt of the town, and is one of the fineſt and the moſt extenſive in Europe. Its length from the ſouth gate to the bridge is 1014 yards, beyond which it reaches 1016 yards farther, making its whole extent a mile and 270 yards. In many places the breadth is 150 yards, and the ſouthern part is decorated with a range of handfome buildings. By means of a bridge acrofs the Yare a communication is maintained with the county of Suffolk, which ftretches up the weft bank of the river. As a fafhionable watering-place, Yarmouth is well provided with every accommodation, and confequently much frequented. On the beach a bathing-houfe was erected in 1759, commanding a fine view of the roads and fhipping; and in 1778 a neat theatre was opened. Oppofite to Yarmouth, and for about two miles north and fouth of the town, the coaft is nearly a level common, elevated only from two to three yards above high-water mark. From the edge of the common down to the water is a gentle flope of fine fand, intermixed with loofe pebbles called fhingles; and as the tides rife but about fix feet, the fpace brought under water is only a few yards. From high-water mark to the turf of the common the fands abound with marine plants, fome of them rare and curious, of which an account is given by Mr. Dawfon Turner in the Hiftorical Guide to Great Yarmouth, 12mo. 1806.— Beauties of England and Wales, Norfolk, by J. Britton, F.S.A. 8vo. Lond. 1809.

YARMOUTH, *South*, a fea-port, borough, and market-town, in the S.W. half hundred of Weft Medina liberty, in the Ifle of Wight, and county of Southampton, or Hampfhire, England, is fituated at the entrance of the little river Yare, on the N.W. coaft of the ifland, 10 miles W. from Newport, and 97 S.W. from London. The town, which is governed by a mayor, twelve burgeffes, a fteward, a town-clerk, &c. was incorporated by James I., and fends two members to parliament. In 1811 the houfes in the borough and parifh were 88, and the inhabitants 427. A market is held here on Saturday, and two fairs annually. Yarmouth is built on a bank floping to the fea, and feems to have been formerly much larger than it is at prefent. The church is fituated in the middle of the town. The market-houfe has over it the town-hall. Here was a caftle, built by Henry VIII. on the fcite of an ancient church, which had been deftroyed by the French. This fortrefs is defended by fome pieces of cannon, and a fmall garrifon. Between Yarmouth and Lymington a packet fails daily.—Beauties of England and Wales, Hampfhire, by J. Britton and E.W. Brayley, 8vo. Lond. 1808.

YARMOUTH, a fea-port town of Maffachufetts, in Barnftaple bay; 50 miles S.E. of Bofton. N. lat. 41° 42′. W. long. 70° 10′.

YARMOUTH, a town on the weft coaft of Nova Scotia; 35 miles W. of Shelburn.

YARMOUTH, *North*, a town of America, in the diftrict of Maine, and county of Cumberland, with 3295 inhabitants; 9 miles N.E. of Portland. N. lat. 43° 45′. W. long. 70° 8′.

YARMUC, or YARUN, a town of Paleftine, in the diftrict of Saphet, on a river of the fame name, which runs into the lake of Tiberias, chiefly inhabited by Chriftians; 24 miles S.E. of Saphet.

YARMUC, a river of Syria, anciently called *Marfyas*, which runs into the Orontes, near Apamea. In 636 a battle was fought on the banks of the river, between the Chriftians and the Saracens, in which the former were defeated.

YARN, denotes fpun wool. See WOOL, and WOOLLEN *Manufacture*.

YARN, *Marking*. See MARKING.

YARN, in *Rope-Making*, is fpun from hemp, and is called twenty-five, twenty, and eighteen thread yarn, which differs only in the finenefs; the twenty-five being finer than the twenty, &c. It is thus diftinguifhed, becaufe either twenty-five, twenty, or eighteen threads a hook, make a rope of three inches in circumference, and fo in proportion.

YARN, *Spun*, on board a *Ship*. See SPUN.

YARNALLS, in *Geography*, a town of Pennfylvania; 20 miles E. of Sunbury.

YAROVOI, a town of Ruffia, in the government of Tobolfk, on the Irtifch; 52 miles N. of Tobolfk.

YARRA. See JARRA.

YARRINGLES, or YARRINGLE-*Blades*, a kind of reel, or inftrument, with which hanks of yarn are wound on to clues, or balls.

YARROW, in *Botany*. (See ACHILLEA.) Perhaps this old Englifh name originated in the Spanifh *Yerba*, or *Yerva*, an herb; our Common *Achillea Millefolium* having been formerly called, in that language, *Milhoyas Yerva*, or Thoufand-leaved Herb, a tranflation of its Latin appellation.

The leaves and flowers of the common yarrow, or *achillea millefolium* of Linnæus, which is in flower on our ditch-banks, and in dry paftures, the greateft part of the fummer, are greatly recommended by fome of the German phyficians, as mild corroborants, vulneraries, and antifpafmodics, in diarrhœas, hemorrhages, hypochondriacal, and other diforders. They promife, fays Dr. Lewis, by their fenfible qualities, to be of no inconfiderable activity. They have an agreeable, though weak, aromatic fmell, and a bitterifh, roughifh, fomewhat pungent tafte. The leaves, having the greateft bitterifhnefs and aufterity, are chiefly directed for medicinal ufe; the flowers have the ftrongeft and moft fubtile fmell, are remarkably acrid, and promife to be of the greateft efficacy, if the plant has any fuch efficacy, as an anodyne or antifpafmodic. The virtue of both leaves and flowers is extracted by watery and fpirituous menftrua; the aftringency moft perfectly by the former; their aromatic warmth and pungency by the latter; and both of them equally by a mixture of the two. The flowers, diftilled with water, yield a penetrating effential oil, poffeffing the flavour of the milfoil in perfection; in confiftence fomewhat thick and tenacious; in colour very variable, from a greenifh-yellow to a deep green and blueifh-green, and fine blue, which differences depend in a great meafure on the foil in which the plant is produced; the flowers gathered from moift frefh grounds yielding generally a blue oil, and thofe collected from dry commons a green one, with a greater or lefs admixture of yellow. The extract obtained by infpiffating the yellowifh tincture made in rectified fpirit, is more agreeable in fmell than the flowers, of a moderately warm penetrating tafte, fomewhat like that of camphor, but much milder, accompanied with a flight bitterifhnefs and fubaftringency. The *achillea ptarmica* of Linnæus, called *fneezewort*, or *baftard pellitory*, is perennial, grows wild on heaths, and in moift fhady grounds, and is found in flower from June to the end of fummer. The roots of this plant have a hot biting tafte, approaching to that of pellitory of Spain, with which they nearly agree in their pharmaceutic properties, and for which they have been fometimes fubftituted in the fhops. They are by fome recommended internally as a warm ftimulant and attenuant; but their principal ufe is as a mafticatory and fternutatory. Lewis.

YARROW, in *Agriculture*, a plant of the herbage kind, which is common but ufeful in the pafture-field in many cafes. It has long ago been noticed, by the writer of the "Effays on Rural Affairs," as valuable for cultivation in grafs-lands in different forts of foil. It fucceeds on moift loams, but is moft proper for dry burning gravels, fands,

and

and chalks. It is ſaid to poſſeſs the ſingular quality or property of reſiſting drought on the moſt arid ſoils; ſo that if a green ſpot appears in a burnt-up cloſe-fed paſture ground, it may almoſt with certainty be concluded to be covered with this plant. In paſtures there is not any ſort of plant which is eaten down more cloſely than this, by every kind of browſing domeſtic animal. It has been remarked with ſurpriſe, that ſpots of rich dry land, which were almoſt wholly filled with theſe plants, were eaten down barer than even white clover. It is a ſtrong-rooted perennial plant, which has many fine leaves, of a highly aromatic ſmell, and which is conſidered as not only very acceptable, but uncommonly healthy, or even medicinal, both to ſheep and black cattle.

It is found in the beſt bullock paſtures and grounds, where it is ſaid to be highly grateful to every ſort of live-ſtock of the cattle kind, and particularly ſo to ſheep, which bite it as faſt as it grows or riſes: ſo that on tolerably well-ſtocked paſtures or grounds it is rarely ſuffered to come into flower. The ſeeds of it are, therefore, to be obtained from ſome rich dry ſpot which is well ſtored with the plant; and if the ſoil be well ſupplied with good mouldy compoſt, it has been found that the yarrow may be made into a rough hay, from which it is eaſy to obtain ſeeds, which are of a peculiar winged form and appearance. It flowers late in the ſummer, and the ſeeds may be gathered about the month of October.

It is a plant that has not been obſerved in abundance in boggy or wet lands; but which, for dry rich ſoils, deſerves the preference to moſt others for the purpoſe of being depaſtured. It is a plant that on the whole ſeems to merit the attention of the ſtock-farmer, at leaſt in a much greater degree than he has yet beſtowed upon it.

YARROW, *Water*. See *Water* VIOLET.

YARROW, in *Geography*, a river of Scotland, which riſes in a mountain called *Yarrow Cleugh*, in the county of Selkirk, forms two lochs, St. Mary's and Lows, in its courſe, and runs into the Tweed, about two miles below Selkirk.

YARUM. See YARM.

YARUQUI, a plain twelve miles north-eaſt from the city of Quito. This ſpot was pitched upon as the baſe of the whole operations for meaſuring the length of an arc of the meridian, by Ulloa, &c. Near it is a village of the ſame name.

YARWHELP, or YARWIP, an Engliſh name uſed in ſome places for the *ægocephalus* of authors. See GODWIT.

YASASCHNA, in *Geography*, a town of Ruſſia, in the government of Irkutſk, on the Kitoi; 68 miles N.W. of Irkutſk.

YASASCHNAIA, a river of Ruſſia, which runs into the Kolima, at Verchnei Kovimſkoi.

YASCHAMBOU, a town of Perſia, in the province of Adirbeitzan; 198 miles S.W. of Tauris.

YASSA, in *Modern Hiſtory*, the name given among the Tartars to a body of laws, aſcribed to the famous conqueror Gengis-Kan, which are ſtill obſerved among the Tartars of Crimea, and other parts of Aſia. M. de la Croix has given, in his life of Gengis-Kan, an extract of thoſe laws, compriſing twenty-one articles: the firſt of which inculcates the belief of one God, the Creator of heaven and earth, and to whom belong the abſolute diſpoſal and dominion of events.

YASUDA, in *Hindoo Mythology*, the name of the foſter-mother of the Hindoo Kriſhna: it is ſaid to mean the *giver of honour*.

YASUDERA, the name of the wife of Budha, or Boodh, or deity of the Hindoos, and of other people. See BOODH.

YATA, in *Geography*, a town on the ſouth coaſt of the iſland of Catanduanes. N. lat. 13° 52′. E. long. 124° 29′.

YATCHEVERAM, a town of Hindooſtan, in the Carnatic; 25 miles S.W. of Nellore.

YA-TCHI, a town of Corea; 25 miles S.W. of Outcheou.

YA-TCHING, a town of China, in Fo-kien; 15 miles N.E. of Fou-nhing.

YATE'S RIVER, a river of Africa, which runs into the Atlantic, N. lat. 8° 8′. W. long. 12° 15′.

YATHKIED, a lake of North America. N. lat. 63° 10′. W. long. 98°.

YATI, the prieſthood of the extenſive ſect of Jaina, in India. (See JAINA.) A yati is ſometimes ſaid to be more properly an aſcetic, for it doth not appear that he performs any religious rite. It is his duty to read and expound to his diſciples the ſcriptures of the Jaina ſyſtem. See under SECTS *of Hindoos* for a general notice of the Jainas.

The yatis are devoted to religion from their infancy; for with the Jainas the prieſthood is not hereditary, as with the orthodox Hindoos. A yati never marries, but ſometimes purchaſes a child, adopts it, and inſtructs it in religious duties. Parents ſometimes vow or promiſe their firſt-born to the deity, in the hope of obtaining the bleſſing of fecundity in their family. They ſerve their noviciate with their guru, or preceptor, and perform for him many domeſtic offices. After a proper period, when arrived at a ſufficient age and progreſs in their ſtudies, they are admitted as yatis. The ceremony on this occaſion is ſimple. The noviciate is carried out of the town with muſic and rejoicing in proceſſion, followed by a crowd of Sravakas, as the laity of the Jainas are called. (See SRAVAKA.) He is taken beneath a tree with milky juice. The pipala, or Indian fig, is uſually preferred. A circle is formed on the ground, within which none but yatis are admitted. The hair, or lock, of the noviciate is pulled out by the root at five pulls; and camphor, muſk, ſandal, ſaffron, and ſugar, are applied to the ſcalp: he is then ſtripped, and placed, with joined palms, the poſture of reſpect and ſupplication, before his guru, who pronounces a mantra (ſee MANTRA) in his ear, and inveſts him with the dreſs of a yati, which conſiſts of a cloth of three cubits for his loins, another of five cubits for his head, a coarſe country blanket, called *kamly*, for his bed, a water-pot, a plate for his victuals, a cloth to tie them up in, a long ſtick to defend him, but not to injure others, and laſtly, a broom of cotton-threads to ſweep the ground where he ſits or lies, to avert the deſtruction of any inſect. The Jainas are the ſect that ſo eſpecially avoid ſhedding blood or deſtroying life; a tenet that leads them to ridiculous exceſſes, as will be ſeen under our article JAINA, in which ſeveral particulars of the yati are alſo given.

YATREB, in *Geography*, the real name of Medina, in Arabia. It is called *Medina*, or the city, by way of eminence.

YATTENDON, a village of England, in the county of Berks. Here Alfred overthrew the Danes in 876; 4 miles S.E. of Eaſt Ilſley.

YATTONG, a town of Burmah; 15 miles W.N.W. of Ava.

YATTONUR, a town of the iſland of Ceylon; 10 miles S.W. of Candy.

YAUACA, a town of Peru, in the diocefe of Lima, on the coaft; 20 miles S.S.E. of Nafca. S. lat. 15°.

YAUGAR, a town of Burmah, on the right bank of the Irawaddy, oppofite to Raynangong.

YAUGOS, a town of Peru, in the diocefe of Lima; 80 miles S.E. of Lima. S. lat. 12° 40′. W. long. 75° 46′.

YAVI, a town of Peru, in the diocefe of La Plata; 85 miles E.S.E. of Lipes.

YAW, in *Sea Language*, denotes the movement by which a fhip deviates from the line of her courfe towards the right or left in fteering. See STEADY.

YAWL, a fmall light fhip's boat, rowed with four to fix oars, ufed to convey the officers to and from the fhip.

YAWNING, OSCITATIO, an involuntary opening of the mouth, generally indicating a troublefome wearinefs, or an inclination to fleep. See LUNGS.

YAWS, in *Medicine*, a fevere cutaneous difeafe, which is indigenous in Africa, and has been thence conveyed to the Weft Indies and America; fo called from the refemblance of its eruptions to a rafpberry, the word *yaw* in fome African dialect being the name of that fruit. Nofologifts have denominated it *Frambœfia*, from the French *Framboife*, which has the fame fignification.

The nature of this difeafe has been imperfectly inveftigated by European practitioners; and as it is perhaps never feen in England, a brief account of it will be here fufficient.

It is not eafy to difcover the precife character of this eruption, from the varying language of authors. An anonymous writer, who gave the firft explicit account of the difeafe, (fee Edinb. Med. Effays, vol. v. part 2. art. 76.) fays, they are at firft "level or fmooth with the fkin," but foon "become protuberant *like pimples*." Dr. Hillary, who has copied much from this writer, defcribes them as "*pimples*," though fmooth and level with the fkin, but foon becoming "protuberant *puftules*." (On the Dif. of Barbadoes, p. 339.) And Dr. Winterbottom, who has given on the whole the moft perfpicuous defcription of the difeafe, calls them "*puftules*," from their firft appearance. Again, as to the contents of thefe eruptions, the anonymous author and Dr. Hillary fay, that *no pus* nor any quantity of ichor is found in them, but fpeak of a little *ichor* as drying upon the furface; while Dr. Winterbottom fays, they are "filled with an opaque whitifh fluid," and when they burft, "a thick vifcid matter is difcharged." There is alfo fome difference of opinion among the writers on this difeafe refpecting the precurfory fymptoms, the earlier authors afferting, that the general health is not impaired during the firft ftages; but others, efpecially Dr. Winterbottom and Dr. Dancer, affirm, that a *febricular* ufually precedes it. On the whole, however, the following appears to be the moft correct account of the malady, which is to be collected from the various defcriptions which have been publifhed.

The eruption of the yaws fometimes commences without any precurfory fymptoms of ill health; but it is generally preceded by a flight febrile ftate, with languor, debility, and pains of the joints, refembling thofe of rheumatifm. After feveral days, minute protuberances appear on various parts of the fkin, at firft fmaller than the head of a pin, but gradually enlarging, in fome cafes to the diameter of a fixpence, and in others even to a greater extent: they are moft numerous, and of the largeft fize, in the face, groins, axilla, and about the anus and pudenda. But the crop is not completed at once; new eruptions appear in different places, while fome of the earlier ones dry off. When the cuticle is broken, a foul cruft is formed on the furface, from under which, on the larger protuberances, red fungous excrefcences often fpring up, which attain different magnitudes, from that of a fmall rafpberry to that of a large mulberry, which fruit they fomewhat refemble from their granulated furfaces. When the eruption is moft copious, thefe tubercles are of the fmalleft fize; and when fewer, they are largeft. Their duration and progrefs are various in different conftitutions, and at different periods of life. Children fuffer lefs feverely than adults, and are more fpeedily freed from the difeafe. In them, according to Dr. Winterbottom, the duration of the yaws is from fix to nine months; while in adults it is feldom cured in lefs than a year, and fometimes continues during two or three. The fungous tubercles attain their acme, according to the anonymous writer already quoted, more rapidly in the well-fed negroes than in thofe who are ill-fed and thin; and they likewife acquire a larger fize in the former than in the latter. They are not poffeffed of much fenfibility, and are not the feat of any pain, except when they appear upon the foles of the feet, where they are confined and compreffed by the hard and thickened cuticle: in that fituation they render the act of walking extremely painful, or altogether impracticable. They never fuppurate kindly Dr. Winterbottom fays, but gradually difcharge a fordid glutinous fluid, which forms an ugly feat round the edges of the excrefcence, and covers the upper part of it, when much elevated, with white floughs. When they appear on any part of the body covered with hair, this gradually changes in its colour from black to white, independently of the white incruftation from the difcharge. They leave no depreffion of the fkin.

The period during which the eruption is in progrefs varies from a few weeks to feveral months. "When no more puftules are thrown out," Dr. Winterbottom obferves, "and when thofe already upon the fkin no longer increafe in fize, the difeafe is fuppofed to have reached its acme. About this time it happens, on fome part of the body or other, that one of the puftules becomes much larger than the reft, equalling or furpaffing the fize of a half-crown piece: it affumes the appearance of an ulcer, and inftead of being elevated above the fkin like others, it is confiderably depreffed; the furface is foul and floughy, and pours out an ill-conditioned ichor, which fpreads very much, by corroding the furrounding found fkin: this is what is called the *mafter* or *mother yaw*." When arrived at its acme, however, the eruption continues a confiderable time without undergoing much alteration, often without very materially injuring the functions, and it feldom proves dangerous, except from the mifchievous interference of ill-directed art.

The yaws is propagated folely by the contagion of the matter difcharged from the eruption, when it is applied to the wounded or broken fkin of another perfon, who has not previoufly undergone the difeafe. For, like the febrile eruptions, the yaws affects the fame perfon only once during life; but, unlike them, it is not propagated by effluvia. The complaint is fometimes inoculated by flies, in thofe hot countries, when the fkin both of the difeafed and the healthy remains uncovered. Hence, Dr. Bancroft fays, "none ever receive it whofe fkins are whole; for which reafon the whites are rarely infected; but the backs of the negroes being often raw by whipping, and fuffered to remain naked, they fcarce ever efcape it." (Nat. Hift. of Guiana, p. 385. See alfo Winterbottom, p. 141—3.) In Africa it is ufually undergone during childhood. The period which elapfes between the reception of the contagion and the commencement of the difeafe is no where mentioned; but in the cafe of a Dane, whom Dr. Adams faw at Madeira, the patient had been abfent ten months from

from the Weſt Indies before he felt any indiſpoſition. See Memoirs of the Med. Soc. of London.

With reſpect to the treatment of yaws, nothing very ſatisfactory is to be collected from the writings of the practitioners to whom we are indebted for the hiſtory of the diſeaſe. "The native Africans," according to Dr. Winterbottom, "never attempt to cure it until it has nearly reached its height, when the fungi have acquired their full ſize, and no more puſtules appear." And the practitioners in the Weſt Indies ſoon learned by experience, that active evacuations retard the natural progreſs of the diſeaſe; and that mercurials, although they ſuſpended it, and cleared the ſkin of the eruption, yet left the patient ſtill ſuſceptible of, or rather ſtill impregnated with, the virus, which ſpeedily evinced its preſence by a re-appearance of the ſymptoms more ſevere and tedious than before. In truth, the diſeaſe, it would ſeem, like the puſtular and exanthematous fevers of our own climate, will only leave the conſtitution after it has completed the various ſtages of its courſe, and removed the ſuſceptibility of the individual to future infection; and no medicine yet diſcovered has had any influence in ſuperſeding this action, or in accelerating its progreſs. Unleſs, therefore, any urgent ſymptoms ſhould require alleviation, (which ſeldom, if ever, happens) it is adviſeable to diſpenſe with the adminiſtration of medicine, and to be content with reſtricting the patient to a moderate and temperate regimen, during the firſt ſtage of the malady. When the eruptions begin to dry, or as ſoon as they ceaſe to multiply and enlarge, the diſeaſe appears to require the ſame management as other ſlow and ſuperficial ulcerations, accompanied with a cachectic ſtate of the ſyſtem; *viz.* a light but nutritious diet, a dry and wholeſome air, warm clothing, moderate exerciſe, and a courſe of tonic medicine, eſpecially of ſarſaparilla, or cinchona, with the mineral acids, or with antimonials and ſmall doſes of mercury, according to the circumſtances of the individual habit. The effects of mercury, however, exhibited ſo as to excite ſalivation, as the early practitioners recommend, ſeem to be of a very queſtionable nature, eſpecially when it is unaccompanied by the vegetable decoctions; and it is certain that patients have, in ſome caſes, ſoon recovered under the uſe of the latter, when the mercurials were omitted. The mercurial treatment, indeed, is often followed by a train of haraſſing ſymptoms, called by the negroes the *bone-ache.* "The unhappy ſufferer is tormented with deep-ſeated pains in the bones, eſpecially round the joints, which are occaſionally aggravated to a violent degree: the perioſteum becomes thickened, inflamed, and painful, and nodes are formed on the bones. When theſe ſymptoms have continued for ſome time, the bones are affected with caries, and even become ſoft and loſe their form." The native Africans employ decoctions of the bark of two or three trees, which are generally purgative, as well as tonic, and likewiſe waſh the ſores with them, after carefully removing the cruſts.

The *maſter-yaw* ſometimes remains large and troubleſome after the reſt of the eruption has altogether diſappeared. It requires to be treated with gentle eſcharotics, and ſoon aſſumes a healing appearance under theſe applications. Stronger cauſtics are requiſite after the cure of the *crab-yaws*, or tedious excreſcences, which occur on the ſoles of the feet.

We may add, that the anonymous writer in the Edinb. Med. Eſſays, and after him Dr. Hillary and others, have deemed the yaws to be the Hebrew leproſy, deſcribed by Moſes. (Leviticus, chap. xiii.) In ſome reſpects, and eſpecially in the appearance of what is called "raw fleſh" in the leprous ſpots, together with *whiteneſs of the hair*, the deſcription of the leproſy of the Jews is applicable to the yaws. But the leproſy is deſcribed by the great legiſlator as beginning in ſeveral ways, or appearing under ſeveral varieties of form, in only one of which this riſing of "raw fleſh" is mentioned; and the two circumſtances, which all theſe varieties exhibited in common, were a depreſſion of the ſkin and whiteneſs of the hair. Now this change in the colour of the hair is common to the yaws and to the leuce; and it is conjoined in the latter with cutaneous depreſſion. It ſeems pretty obvious indeed, that the term leproſy was uſed in the Scriptures to denote ſeveral diſeaſes of the ſkin, againſt which the law of excluſion was enforced, and others to which it did not apply. An inſtance of the latter occurs in Gehazi, whom we find ſtill in the employment of Eliſha, and even converſing with the king, after the leproſy had been inflicted upon him, "and his ſeed for ever." (2 Kings, chap. v. vi. and viii. v. 4.) See Dr. Bateman's Practical Synopſis of Cutan. Diſeaſes; and the Works above quoted.

YAXARTES, or YAKSARTES, the *Syr-Daria*, in *Geography*, a river of Ruſſia, that falls into the Aral.

YAXLEY, a ſmall market-town in the hundred of Norman-Croſs, and county of Huntingdon, England, is ſituated 2 miles N.E. from Stilton, and 73 miles N. by W. from London. It has of late increaſed in importance from its contiguity to the barracks at Norman-Croſs. The market was for a long time diſcontinued, but has been recently revived, and is now held on Tueſdays. It was originally granted to the abbots of Thorney, one of whom, named De Yalkeſley, who died in 1294, was native of this town. Here is alſo an annual fair. The church is a handſome fabric, and particularly remarkable for its lofty and well-proportioned ſpire, which is ſeen at a conſiderable diſtance on all ſides. The population of the pariſh, in the enumeration of the year 1811, was returned at 1391, occupying 171 houſes.

YAYACATLAN, a town of Mexico, in the province of Tlaſcala; 10 miles E.S.E. of Puebla de los Angelos.

YAYAUHQUITOTOTL, in *Ornithology*, the name of an Indian bird deſcribed by Nieremberg, remarkable for having two feathers of its tail much longer than the reſt, and naked for a great way, but the end ornamented with black and blue hairs. The bird is of the ſize of the ſtarling, and is beautifully variegated with green, blue, yellow, and grey.

Mr. Ray is of opinion, that this is the bird deſcribed by Marcgrave under the name *guiaira-guainambi.*

YAYNANGHEOUM, or EARTH OIL CREEK, in *Geography*, a town of Burmah, on the Irawaddy, which receives its name from ſome wells of petroleum, in its neighbourhood. It is chiefly inhabited by potters; 15 miles S. of Pegongmew.

YAYYOS, or YANVOS, a town of Peru, and capital of a juriſdiction, in the archbiſhopric of Lima, which begins about 48 miles ſouth-eaſt from Lima, and extends about 75 miles in length along the Andes. It abounds in fruit, maize, wheat, barley, &c. and the paſtures feed a great number of cattle for the markets of Lima; 80 miles S.S.E. of Lima.

YAZAMATES, a people who inhabited Kuban, after the Sarmates were for the moſt part given to Europe, five years before Alexander.

YAZOO, a river of the ſtate of Georgia, which runs into the Miſſiſſippi, N. lat. 32° 38′. W. long. 91° 10′.

YAZOO, *Little*, a river of Weſt Florida, which runs into the Miſſiſſippi, N. lat. 32° 13′. W. long. 91° 10′.

YAZVA,

YAZVA, a river of Ruſſia, which runs into the Viſchera, 8 miles E. of Gerdin, in the government of Perm.

YBAGUE, a town of South America, in the kingdom of New Grenada.

YBAICABAL. See NERVIO.

YCA. See ICA.

YCAYALE. See UCAYALE.

YCHAN, a town of Corea; 13 miles S. of Hetſin.

Y-CHI, a town of China, of the third rank, in Chan-ſi; 12 miles N.N.E. of Kiai.

YCONOMIUS. See OECONOMUS.

YDALA, in *Geography*, a town of Sweden, in Blekingen; 10 miles S.S.E. of Kongſback.

YDRIA. See HYDRIA.

YDRINUS, or HYDRINUS, a name given by ſome to the *ophites*, or ſerpent-ſtone.

YDRUS, in *Ancient Geography*, a mountain of Hiſpania. Jerome.

YE, or WYE, in *Geography*, a river of Holland, which paſſes by Amſterdam, and runs into the Zuyder See, about 6 miles below.

YEA WATER, a river of Scotland, which runs into the Nith, 2 miles E. of Lochmaben.

YEADON, a townſhip of Yorkſhire, in the Weſt Riding, with 1695 inhabitants, including 476 employed in trade and manufactures; 3 miles S. of Ottley.

YEALME, a river of England, in the county of Devon, which runs into the Engliſh Channel, 1 mile N.N.W. of Stoke Point.

YEANGLAW, a town of Birmah; 7 miles S. of Pegongmew.

YEANING, among *Sheep-Farmers*, a term uſed to ſignify the act of bringing forth the young in animals of the ſheep kind. It is ſaid that in the polled breeds of ſheep the lambs are yeaned with the greateſt eaſe and facility, and in the large-horned breeds with the greateſt difficulty and inconvenience. See SHEEP.

YEANING-*Time*, the ſeaſon of yeaning in ſheep, which is different in different breeds of them, but probably the moſt early in the Dorſetſhire breed, as they may be managed ſo as to lamb at a very early period. In general, however, the management is ſuch, that the lambs are yeaned or brought forth from towards the latter end of February to the beginning of the following month, and later in ſome caſes and ſituations. When yeaned too early there is often great loſs, on account of the inclemency of the ſeaſon, unleſs the ewes have been kept very well for ſome time before it takes place. Conſequently, in all ſuch caſes, they ſhould, for ſome weeks at leaſt before the yeaning time, be plentifully ſupplied with proper food, ſo that the health and ſtrength of them and that of their young may be promoted and preſerved againſt this period. Proper ſheltered ſituations, yards, and ſpots of ground, ſhould alſo be provided for this purpoſe, by which the lives of numbers may be ſaved. See SHEEP.

In all bad caſes of yeaning, the ewes ſhould be well ſupported by good oatmeal gruel and cordial drinks.

YEANLING, a term applied to the young of the ſheep kind when newly yeaned. See LAMB.

YEAR, ANNUS, in the full extent of the word, is a ſyſtem or cycle of ſeveral months; uſually twelve.

Others define year, in the general, a period, or ſpace of time, meaſured by the revolution of ſome celeſtial body in its orbit.

Thus, the time in which the fixed ſtars make a revolution is called the great year. And the times in which Jupiter, Saturn, the ſun, moon, &c. finiſh their revolutions, and return to the ſame point of the zodiac, are reſpectively called the years of Jupiter and Saturn; and the ſolar and the lunar years.

As there is no luminary whoſe changes and revolutions are ſo frequent and remarkable as thoſe of the moon, ſome have thought that all nations at firſt meaſured and divided time according to the various aſpects of this planet. Accordingly the Egyptian year originally conſiſted of a ſingle lunation; afterwards it included two or three months, and was defined by the ſtated returns of the ſeaſons. It has been alſo ſuppoſed, that ſeveral ages muſt have elapſed before the idea of adjuſting the length of the year to the courſe of the ſun became general, though repeated obſervations were made on his motion in the ecliptic. The Indians, the Chaldæans, and Egyptians, who in a very early period applied their attention to aſtronomy, at length found, by comparing the motions of the ſun and moon together, that one revolution of the former was equal to about 12 of the latter; and hence was formed a year of 12 lunations, in every one of which were reckoned 30 days: and hence alſo, it is ſaid, aroſe the diviſion of the ecliptic into 360 equal parts or degrees.

Year, properly, and by way of eminence ſo called, is the ſolar year; or the ſpace of time in which the ſun moves through the twelve ſigns of the ecliptic.

This, by the obſervations of Caſſini, Bianchini, and de la Hire, contains 365 days, 5 hours, and 49 minutes; which is the quantity of the year aſſumed by the authors of the Gregorian calendar.

But in the civil or popular account, this year only contains 365 days; except every fourth, which contains 366.

The viciſſitude of ſeaſons ſeem to have given occaſion to the firſt inſtitution of the year. Man, naturally curious to know the cauſe of that diverſity, ſoon found it was the proximity and diſtance of the ſun; and, upon this, gave the name year to the ſpace of time in which that luminary, performing his whole courſe, returned to the ſame point of his orbit.

And hence, as it was on account of the ſeaſons, in a great meaſure, that the year was inſtituted, their chief regard and attention were, that the ſame parts of the year ſhould always correſpond to the ſame ſeaſons; *i. e.* that the beginning of the year ſhould always be when the ſun was in the ſame point of his orbit; and that they ſhould keep pace, come round, and end together.

This, different nations aimed to attain by different ways; making the year to commence from different points of the zodiac, and even making the time of his progreſs different. So that ſome of their years were much more perfect than others, but none of them quite juſt; *i. e.* none of them whoſe parts did not ſhift, with regard to the parts of the ſun's courſe.

We may naturally ſuppoſe that the commencement of the year would be determined by the date of ſome conſiderable event, ſuch as the creation of the world, the univerſal deluge, a conjunction of planets, the incarnation of our Saviour, &c.; and of courſe it has been referred to different points in the ecliptic. The Chaldæan and Egyptian years were dated from the autumnal equinox. The eccleſiaſtical year of the Jews began in the ſpring; but in civil affairs they retained the epoch of the Egyptian year. The ancient Chineſe reckoned from the new moon, neareſt to the middle of Aquarius; but according to ſome recent accounts, the beginning of their year was transferred (B. C. 1740) to the new moon neareſt to the winter ſolſtice. This likewiſe is the date of the Japaneſe year. Diemſchid, or or Gemfchid, king of Perfia, obferved on the day of his public entry into Perfepolis, that the fun entered into Aries; and in commemoration of this fortunate event and coincidence, he ordained the beginning of the year to be removed from the autumnal to the vernal equinox. This epoch was denominated Neuruz, *viz*. New-day, and is ftill celebrated with great pomp and feftivity.

The ancient Swedifh year commenced at the winter folftice, or rather at the time of the fun's appearance in the horizon, after an abfence of about 40 days. The feaft of this epoch was folemnized on the 20th day after the folftice. Some of the Grecian ftates computed from the vernal, fome from the autumnal equinox, and others from the fummer tropic. The year of Romulus commenced in March, and that of Numa in January. The Turks and Arabs date the year from the 16th of July; and the American Indians reckon from the firft appearance of the new moon of the vernal equinox. The church of Rome has fixed new-year's day on the Sunday that correfponds with the full moon of the fame feafon. The Venetians, Florentines, and Pifans in Italy, and the inhabitants of Treves in Germany, begin the year at the vernal equinox. The ancient clergy reckon from the 25th of March; and this method was obferved in Britain until the introduction of the New Style, A.D. 1752, after which our year commenced on the firft day of January. See EPOCHA and CHRONOLOGY.

They were the Egyptians, if we may credit Herodotus, that firft formed the year, which was luni-folar, making it to contain 360 days, which they fubdivided into 12 months.

This year was corrected by the Thebans, who added to it five intercalary days. The Medes and Perfians, who were anciently a part of the Affyrian empire, adopted the old Chaldæan year of 360 days, which they afterwards reformed.

Some miffionaries report, that the luni-folar year was corrected in China; the year of the Indians contained 360 days, and was divided into 24 months. But befides this form of the year, the Indians ufed another, for aftronomical purpofes, confifting of 365 d. 15 h. 31′ 15″; which Indian days and hours are equal to 365 d. 6 h. 12′ 30″, according to our mode of computation. Or, as this year is fidereal, if you fubtract 21′ 35″ on account of the motion of the ftars in longitude, the Indian tropical year will be 365 d. 5 h. 50′ 55″. The Mexicans received the luni-folar year from the Indians or Chinefe, and divided it into 18 months of 20 days; adding five days to the laft month, and dating the year from March. That the ancient Grecian year was luni-folar, is evident from many teftimonies of Hippocrates, Plato, and Pliny. The Latin year, before Numa's correction of it, confifted of 360 days, 304 of which were divided into 10 months; and to thefe were added two private months, not named in the calendar. Plut. in Vit. Numa. Serv. et Virgil Georg. l. i. v. 43.

It has been faid that Mercurius Trifmegiftus added five days to the Egyptian year of 360 days. And, on this footing, Thales is faid to have inftituted the year among the Greeks; though that form of the year did not hold throughout all Greece. Add, that the Jewifh, Syrian, Roman, Perfian, Ethiopic, Arabic, &c. years were all different.

In effect, confidering the imperfect ftate of aftronomy in thofe ages, it is no wonder different people fhould difagree in the computation of the fun's courfe. We are even affured by Diod. Siculus (lib. i.), Plutarch in Numa, and Pliny (lib. vii. cap. 48.), that the Egyptian year itfelf was at firft very different from that now reprefented.

The imperfection of the luni-folar year became more and more apparent as the arts and fciences improved; but the neceffary correction depended upon a competent knowledge of the folar year. Every nation, by degrees, invented or adopted the method of intercalating a few days at certain intervals. The author of the difcovery is not certainly known: the Egyptians have claimed the merit of it; and the Theban priefts have attributed it to Hermes or Thoth. It appears that they were acquainted with the year of 365 days in a very remote period. (Herodot. l. iv. c. 4. Strabo Geog. l. xvii. Syncull. Chron. p. 121.) The length of the folar year was reprefented in a golden circle fixed upon the tomb of Ofymandes; and this circle was 365 cubits in circumference, having on each cubit a day of the year infcribed, together with the heliacal rifings or fettings of the ftars. This Ofymandes is faid to have flourifhed either in the 13th or 11th century before the Chriftian era. For perpetuating the memory of this correction, though inaccurate, the firft month of the year was diftinguifhed by the title Thoth, or Sothis, which was the Egyptian appellation of the dog-ftar, the heliacal rifing of which announced the inundation of the Nile. Hence, it is faid, originated the fable, invented of the priefts of Thebes, that Mercury, or Thoth, regulated the civil year by extending it, as we have already obferved, to 365 days; and, in return, the firft month was called by his name. See *Egyptian* YEAR, and CANICULAR *Year*.

The method of correcting the civil year, by the addition of five epagomenæ, was communicated by the Chaldæans and Egyptians to other nations; but it has not been afcertained at what epoch the folar year was obferved to be almoft 6 hours longer than the civil year of 365 days. The priefts of Thebes claimed the merit of the difcovery (Diod. Sicul. l. i. p. 59. Strabo Geog. l. xvii.); but Herodotus takes no notice of it; nor Thales, who, on his return from Egypt, taught the Greeks to form a folar year of 365 days without any intercalation. Plato and Eudexus are faid to have obtained it, as a fecret, from the Egyptians, about 80 years after Herodotus, and to have carried it into Greece; which fhews that the knowledge of this form of the year was then recent, and confined to a few of the learned, while the old form was ftill retained, and the Egyptians ufed no intercalation until the corrected Julian year was received at Alexandria by the order of Auguftus; and even at this time the Greeks and Romans, who refided in Egypt, alone obeyed the imperial mandate. The fuperftitious nations refufed to admit any addition to a form of the year which had been fo long eftablifhed among them.

The reformed year of the Chinefe confifted of 365 d. 5 h. 20′, which were divided into 24 months, each of thefe equal parts including 15 d. 5 h. $14\frac{7}{12}$′. (Du Halde. Hyde. Relig. Vet. Perf.) The quantity of the Indian year was fomewhat different from that of the Chinefe: the lunar year contained 364 d. 22 gurris, 1 pull; and the folar year 365 d. 15 gurris, 30 pulls, $22\frac{1}{2}$ puts; 60 puts = 1 pull, 60 pulls = 1 gurri, and 60 gurris = 1 day: fo that their folar or rather fidereal year confifted of 365 d. 6 h. 12′ 7″. This mode of computation is ufed by the Bramins, by the Moguls, and by other Mahometans in India.

YEAR, *Solar*, is the interval of time in which the fun finifhes his courfe through the zodiac; or in which he returns to the fame point of it from whence he had departed.

This, according to our account, is 365 days, 5 hours, 49 minutes; though fome aftronomers make it a few feconds, and fome a whole minute lefs; as Kepler, for inftance, who makes it 365 days, 5 hours, 48 minutes, 57 feconds, 39 thirds. Ricciolus, and Tycho Brahe, 365 days, 5 hours, 48 minutes.

The

The solar year is either *astronomical* or *civil*.

YEAR, *Solar Astronomical*, is that determined precisely by the observations of astronomy; and is of two kinds, *tropical* and *sidereal* or *astral*.

YEAR, *Tropical* or *Natural*, is the time which the sun employs in passing through the zodiac, or from one equinox, or one tropic, to the same again; which, as before observed, is 365 days, 5 hours, 49 minutes; or, more accurately, 365 d. 5 h. 48′ 48″. This is the only proper or natural year, because it always keeps the same seasons to the same months.

In order to find the tropical year, observe the meridian altitude, a, of the sun on the day nearest to the equinox; then the next year take its meridian altitude on two following days, one when its altitude, m, is less than a, and the next when its altitude, n, is greater than a, then $n - m$ is the increase of the sun's declination in 24 hours; also, when the declination has increased by the quantity $a - m$ from the time when the meridian altitude, m, was observed, the declination will then become a; and as we may consider the increase of declination to be uniform for a day, we have $n - m : a - m$ :: 24 hours, the interval from the time when the sun was on the meridian on the first of the two days, till the sun has the same declination a, as at the observation the year before; and this time, added to the time when the sun's altitude m was observed, gives the time when the sun's place in the ecliptic had the same situation in respect to the equinoctial points, which it had at the time of the observation the preceding year; and the interval of these times is the length of a tropical year.

If, instead of repeating the second observation the next year, there be an interval of several years, and you divide the interval between the times when the declination was found to be the same, by the number of years, you will get the tropical year more exactly.

YEAR, *Sidereal* or *Astral*, is the space of time in which the sun, going from any fixed star, returns to the same. This consists of 365 days, 6 hours, 6 minutes, 11,5 seconds.

To find the length of a sidereal year. On any day when the sun is at Z on the meridian (*Plate* XXI. *fig.* 12.), take the difference, Z m, between the sun's right ascension when it passes the meridian, and that of a fixed star, S; and when the sun returns to the same part of the heavens the next year, compare its right ascension with that of the same star for two days, one when their difference, $b\,m$, of right ascensions is less, and the other when the difference, $f\,m$, is greater than the difference, Z m, before observed; then $b\,f$ is the increase of the sun's right ascension in the time, t; and as the increase of right ascension may be considered as uniform for a small time, we have $b\,f : b\,Z :: t$: the time, T, in which the right ascension is increased from b to Z; this time, T, therefore, added to the time of the observed right ascension at b, gives the time when the sun is at the same distance, Z m, in right ascension from the star, which it was when observed at Z the year before; the interval of these times is therefore the length of the sidereal year. The best time for these observations is about March 25, June 20, September 17, December 20, the sun's motion in right ascension being then uniform. Instead of observing the difference of the right ascensions, you may observe that of their longitudes.

If, instead of repeating the second observations the year after, there be an interval of several years, and you divide the observed interval of time when the difference of their right ascensions was found to be equal, by the number of years, you will have the length of a sidereal year more exactly.

The precession being given (see PRECESSION), and also the length of a tropical year, the length of a sidereal year may be found by this proportion; $360° - 50'',25 : 360°$ :: 365 d. 5 h. 48′ 48″ : 365 d. 6 h. 9′ $11\frac{1}{2}''$ the length of the sidereal year.

YEAR, *Anomalistical*, is the time that elapses from the sun's leaving its apogee till it returns to it: and as the progressive motion of the apogee in a year is $11'',75$, the anomalistical year must be longer than the sidereal year, by the time which the sun takes in moving over $11'',75$ of longitude at its apogee; but when the sun is in its apogee, its motion in longitude is 58′ 13″ in 24 hours: hence $58'\ 13'' : 11'',75$ :: 24 hours : $4'\ 50\frac{2}{3}''$, which added to 365 d. 6 h. 9′ $11\frac{1}{2}''$, gives 365 d. 6 h. 14′ $2\frac{1}{6}''$, the length of the anomalistical year. M. de la Lande determined this motion of the apogee from the observations of M. de la Hire, and those of Dr. Maskelyne. Cassini made it the same. This year is sometimes used by astronomers. See ANOMALISTICAL *Year*.

YEAR, *Civil*, is that form of year which each nation has contrived for the computation of time: or the *civil* is the tropical year, considered as only consisting of a certain number of whole days; the odd hours and minutes being set aside, to render the computation of time in the common occasions of life more easy.

Hence, as the tropical year is 365 days, 5 hours, 48 minutes, 48 seconds, the civil year is 365 days. And hence, also, as it is necessary to keep pace with the heavens, it is required that every fourth year should consist of 366 days.

Hence, lastly, the civil year is either *common* or *bissextile*.

YEAR, *the Common Civil*, is that consisting of 365 days. This, therefore, has seven months of 31 days each, four of 30 days, and one of 28 days; according to the well-known canon:

Thirty days hath September,
April, June, and November.
February twenty-eight alone,
And all the rest have thirty-one.

YEAR, *Bissextile*, or *Leap*, is that consisting of 366 days; or it has one day extraordinary; which day is called the *intercalary*, or *bissextile day*.

This intercalary, or additional day to every fourth year, was first appointed by Julius Cæsar; who, to make the civil year keep pace with the tropical ones, contrived that the six hours which the former wanted of being equal to the latter, should, in four years, make a whole day, and be added before the twenty-fourth, or to the twenty-third of February, which was their sixth of the calends of March. Hence, as in that year, they reckon this day twice over, or add *bis sexto calendas*, the year itself came to be called *bis sextus*, and *Bissextile*; which see.

The intercalary day, however, among us, is not introduced by telling the twenty-third of February twice over, but by adding a day after the twenty-eighth of February; which month, in that year, contains twenty-nine days. See LEAP-*Year*.

A farther reformation in this year was made by pope Gregory. See *Gregorian* YEAR, and CALENDAR.

YEAR, *Lunar*, is a system of twelve lunar months. See LUNAR.

Hence, from the two kinds of synodical lunar months, there arise two kinds of lunar years; the one *astronomical*, the other *civil*.

Year, *Lunar Aſtronomical*, conſiſts of twelve lunar ſynodical months; and therefore contains 354 days, 8 hours, 48 minutes, 36 ſeconds; and is, therefore, 10 days, 21 hours, 0 minute, 12 ſeconds, ſhorter than the ſolar year. This is the foundation of the *Epact;* which ſee.

Year, *Lunar Civil*, is either *common* or *emboliſmic*.

Year, *the Common Lunar*, conſiſts of twelve lunar civil months; and therefore contains 354 days.

Year, *the Emboliſmic* or *Intercalary*, conſiſts of thirteen lunar civil months; and therefore contains 384 days. See Embolismic.

Thus far we have conſidered years and months, with a view to the principles of aſtronomy, on which the diviſion is founded. By this, the various forms of civil years that have anciently obtained, or ſtill do obtain in divers nations, are to be examined.

Year, *Ancient Roman*, or *Latin*, was the lunar year, which, as firſt ſettled by Romulus, only conſiſted of ten months; *viz.* 1. March, containing 31 days. 2. April, 30. 3. May, 31. 4. June, 30. 5. Quintilis, 31. 6. Sextilis, 30. 7. September, 30. 8. October, 31. 9. November, 30. 10. December, 30. In all 304 days, which came ſhort of the true lunar year by 50 days; and of the ſolar, by 61 days. Hence, the beginning of Romulus's year was vague, and unfixed to any preciſe ſeaſon; to remove which inconvenience, that prince ordered ſo many days to be added yearly as would make the ſtate of the heavens correſpond to the firſt month, without incorporating theſe additional days, or calling them by the name of any month. Cenſorinus, Varro, and other Roman authors, agree, that the ancient Latin year was divided into 10 months, which appears from a paſſage in Plutarch, that two intercalary months were added to every year; which two months were not inſerted in the calendar. Romulus retained the former names and number of the months; but adapted their quantity nearly to the courſe of the ſun, aſſigning, as we have ſtated, ſix of them 30 days, and to the remaining four 31 days each, and he transferred the beginning of the year from April to March: December was the 10th month, as its name implies; after which the two intercalary months were inſerted, but no names were affixed to them till the ſucceeding reign.

Numa Pompilius corrected the irregular conſtitution of Romulus's year, and compoſed two new months, January and February, of the days that were uſed to be added to the former year. Thus, Numa's year conſiſted of twelve months; *viz.* 1. January, containing 29 days. 2. February, 28. 3. March, 31. 4. April, 29. 5. May, 31. 6. June, 29. 7. Quintilis, 31. 8. Sextilis, 29. 9. September, 29. 10. October, 31. 11. November, 29. 12. December, 29. In all 355 days, which exceeds the quantity of a lunar civil year by one day; and that of a lunar aſtronomical year by 15 hours, 11 minutes, 24 ſeconds, but comes ſhort of the common ſolar year by ten days; ſo that its beginning alſo was vague and unfixed.

Numa, however, deſiring to have it fixed to the winter ſolſtice, ordered 22 days to be intercalated in February every ſecond year, 23 every fourth, 22 every ſixth, and 23 every eighth year, making in all 90 days.

But this rule failing to keep matters even, recourſe was had to a new way of intercalating; and, inſtead of twenty-three days every eighth year, only fifteen were added; and the care of the whole was committed to the pontifex maximus, who neglecting the truſt, let things run to the utmoſt confuſion. And thus the Roman year ſtood till Julius Cæſar made a reformation. See Calendar.

For the manner of reckoning the days of the Roman months, ſee Calends, Nones, and Ides.

Year, *Julian*, is a ſolar year, containing, commonly, 365 days; though every fourth year, called biſſextile, it contains 366.

The months, &c. of the Julian year ſtand thus: 1. January, 31 days. 2. February, 28. 3. March, 31. 4. April, 30. 5. May, 31. 6. June, 30. 7. July, 31. 8. Auguſt, 31. 9. September, 30. 10. October, 31. 11. November, 30. 12. December, 31. But every biſſextile year, a day is added after the 28th of February; which month then contains 29 days.

The aſtronomical quantity, therefore, of the Julian year is 365 days, 6 hours; which exceeds the true ſolar year by ſomewhat more than eleven minutes; which exceſs, in 131 years, amounts to a whole day. So that the times of the equinoxes go backward, and fall earlier by one day in about 131 or 130 years. And thus the Roman year ſtood, till the reformation made in it by pope Gregory.

For this form of the year, we are indebted to Julius Cæſar; who, in the contrivance of it, was aſſiſted by Soſigenes, a famous mathematician, called over from Egypt for this very purpoſe; who, to ſupply the defect of ſixty-ſeven days, which had been loſt through the fault of the pontifices, and to fix the beginning of the year to the winter ſolſtice, made that year to conſiſt of 15 months, or 445 days; which, for that reaſon, is uſed to be called *annus confuſionis*, the *year of confuſion*. See *Julian* Calendar.

Year, *Gregorian*, is the Julian year corrected by this rule; that whereas, on the common footing, every ſecular or hundredth year is biſſextile; on the new footing, three of them are common years, and only the fourth is biſſextile.

The error of eleven minutes in the Julian year, little as it was, yet, by being repeated over and over, at length became conſiderable; and from the time when Cæſar made his correction, was grown into thirteen days, by which means the equinoxes were greatly diſturbed. In the year 1582, the equinoxes were fallen ten days, and the full moons four days, more backwards than they were in the time of the Nicene council; *i. e.* the equinox, which in the year 325, when that council was held, fell on the twenty-firſt of March, was in 1582 thrown back to the tenth, and the full moon was removed from the fifth to the firſt of April. To remedy this irregularity, which was ſtill increaſing, pope Gregory XIII., in the year juſt mentioned, called together the chief aſtronomers of his time, and concerted this correction; and, to reſtore the equinoxes to their place, threw out the ten days that had been got from the time of the council of Nice, and which had ſhifted the fifth of October to the fifteenth. He exchanged the lunar cycle for that of the epacts; and in order to reſtore the ſpring equinox to the Nicene ſtandard, ſubtracted ten days out of the month of October, in that year (1582), making the fourth to be the fifteenth; and by this means, the vernal equinox has been reſtored to the twenty-firſt of March. Moreover, it was endeavoured, by the omiſſion of three intercalary days in four hundred years, to make the civil year keep pace with the ſolar for time to come. See Calendar.

In the year 1700, the error of ten days was grown to eleven; upon which the Proteſtant ſtates of Germany, to prevent farther confuſion, accepted the Gregorian correction. See *Reformed* Calendar, and Style.

Yet is even the Gregorian year far from being perfect; for we have ſhewn, that in four centuries the Julian year gains three days, one hour, twenty minutes; but it is only the three days that are kept out in the Gregorian year; ſo that

that there is ftill an excefs of one hour, twenty minutes, in four centuries, which, in feventy-two centuries, amount to a whole day.

The Gregorian year is now ufed in moft countries in Europe. From the difference between this and the Julian year arifes the diftinction of the old or Julian, and new or *Gregorian Style;* which fee.

YEAR, *Egyptian*, called alfo the *year of Nabonaffar*, on account of the *epocha of Nabonaffar*, is the folar year of 365 days, divided into twelve months, of thirty days each, befides five intercalary days, added at the end.

The names, &c. of the months are as follow: 1. Thoth. 2. Paophi. 3. Athyr. 4. Chojac. 5. Tybi. 6. Mecheir. 7. Phamenoth. 8. Pharmuthi. 9. Pachon. 10. Pauni. 11. Epiphi. 12. Mefori; befide the ἡμεραι επαγομεναι.

Hence, as the Egyptian year in every four years lofes a whole day of the Julian year, becaufe it neglects the fix hours, which make a leap-day once in four years, its beginning, in the fpace of 1460 years, runs through every part of the Julian year; which fpace elapfed, they meet again; and, therefore, it is juftly called the *erratic year*. And becaufe it returns to the fame day of the Julian year after 1460 Julian years, this circle is called the Sothic period. See CANICULAR *Year*.

This year is ufed by Ptolemy, in his Almageft; fo that the knowledge of it is of great ufe in aftronomy, for comparing the ancient obfervations with the modern.

This defultory form was applied by the Egyptians to civil ufes, till Antony and Cleopatra were defeated; and the mathematicians and aftronomers ufed it till the time of Ptolemy.

The ancient Egyptians, we are told by Diodorus Siculus (lib. i.), Plutarch (in the Life of Numa), and Pliny (lib. vii. c. 48.), meafured their years by the courfe of the moon. At firft, they were only one month, then three, then four, like that of the Arcadians; and then fix, like that of the people of Acarnania. Thofe authors add, that it is on this account they reckon fuch a vaft number of years from the beginning of the world; and that, in the hiftory of their kings, we meet with fome who lived 1000 or 1200 years.

But Herodotus is filent on this point: he only fays, that the Egyptian year confifted of twelve months, as we have above reprefented it. Befides, we learn from Scripture, that from the times of the flood, the year was compofed of twelve months; Cham, confequently, and his fon Mifraim, the founder of the Egyptian monarchy, muft have had that cuftom; and it is no way probable his defcendants fhould alter it. Add, that Plutarch fpeaks of it with great uncertainty, and as no more than a report; and Diod. Siculus, as only a conjecture of authors whom he does not name; and who, in all probability, might have framed this hypothefis to reconcile the Egyptian chronology to that of fome other nations.

F. Kircher, however, maintains, that befides the folar year, there were fome of the nomes or cantons of Egypt which ufed a lunar one; and that in the remoteft ages there were fome who took a revolution of the moon, that is, a month for a year; and others, who finding the year too fhort, made it two months, others three, and others four, &c. (Oedip. Egypt. tom. ii. p. 252.) A late author obferves, that Varro has affirmed of all nations, what we have here quoted of the Egyptians; and adds, that Lactantius takes him to tafk on that fubject. We do not know in what places of Varro, or Lactantius, he has feen this: all we can fay is, that Lactantius (Divin. Inft. lib. iii. c. 13.), where he gives Varro's opinion, only reprefents him as fpeaking of the Egyptians. However, St. Auguftine (De Civit. Dei, lib. xv. c. 14.) fhews, that the years of the patriarchs mentioned in Scripture are like ours, and not one of ours equal to ten of theirs, as, it appears, had been the opinion of fome people.

Upon the Egyptians being fubdued by the Romans, they received the Julian year, though with fome alteration; for they ftill retained their ancient months, with the five ἡμεραι επαγομεναι, and, every fourth year, intercalated another day between the 28th and 29th of Auguft. Add, that the beginning of their year, or the firft day of the month Thoth, anfwered to the 29th of Auguft of the Julian year, or to the 30th if it happened to be leap-year.

This year, thus reformed, and called the fixed Egyptian year, was called the *annus Actiacus*, as being inftituted foon after the battle of Actium.

YEAR, *Ancient Greek*, was lunar, confifting of 12 months, which, at firft, had 30 days a-piece, then alternately 30 and 29 days, computed from the firft appearance of the new moon; with the addition of an embolifmic month of 30 days, every 3d, 5th, 8th, 11th, 14th, 16th, and 19th years of a cycle of 19 years; in order to keep the new and full moons to the fame terms or feafons of the year. With this correction, though erroneous, it fubfifted until the time of Herodotus and Hippocrates. Solon attempted the reformation of the calendar by the introduction of the complete and defective months; *i. e.* months of 30 and of 29 days; for two lunations made 59 days, nearly. Thus amended the year became lunar, and was adopted at Athens; but in other ftates of Greece the ancient form was retained.

Their year commenced with the new moon, the full moon of which comes next after the fummer folftice. The order, &c. of their months was thus: 1. Ἑκατομβαιων, containing 29 days. 2. Μηταγειτνιων, 30. 3. Βοηδρομιων, 29. 4. Μαιμακτηριων, 30. 5. Πυανεψιων, 29. 6. Ποσειδεων, 30. 7. Γαμηλιων, 29. 8. Ανθεστηριων, 30. 9. Ελαφηβολιων, 30. 10. Μουνυχιων, 30. 11. Θαργηλιων, 29. 12. Σκιροφοριων, 30.

The Macedonians had other names for their months; fo had the Syro-Macedonians, Smyrnæans, Tyrians; fo alfo the Cyprians, Paphians; and fo the Bithynians, &c.

YEAR, *Ancient Macedonian*, is a lunar year, only differing from the Attic, in the names and order of the months; the firft Macedonian month agreeing with the Attic Mæmacterion: as the Macedonian year commenced not at the fummer folftice, but at the autumnal equinox. The months ftand thus: 1. Διος, 30 days. 2. Απελλαιος, 29. 3. Αυδυναιος, 30. 4. Περιτιος, 29. 5. Δυστρος, 30. 6. Ξανθικος, 29. 7. Αρτεμισιος, 30. 8. Δαισιος, 29. 9. Πανεμος, 30. 10. Λωος. 11. Γορπιαιος, 30. 12. Ὑπερβερεταιος.

YEAR, *Modern Macedonian*, is a folar year, whofe beginning is fixed for the firft of January of the Julian year, with which it perfectly agrees.

This year was particularly called the *Attic year;* and the intercalary month, after Pofideon, was called Ποσειδεων β, or *latter Pofideon.*

YEAR, *Ancient Jewifh*, is a lunar year, confifting, commonly, of eleven months, which alternately contain 30 and 29 days.

It was made to agree with the folar year, either by the adding of 11, and fometimes 12 days, at the end of the year, or by an embolifmic month.

Tradition reports, that Abraham preferved in his family, and tranfmitted to pofterity, the Chaldæan form of the year, which originally confifted of 360 days (compare Dan. vii. 25. xii. 7. with Rev. xii. to xiv. xi. 2, 3.), and remained without any correction until the date of the Nabonaffarean era. If any intercalation was ufed by the Jews, Mofes

Moses appears to have been unacquainted with it. After the Babylonish captivity, they adopted the solar year. When they were subjected to the Syro-Macedonian yoke (B.C. 312), they were compelled to admit the lunar year into their calendar. To adjust this year to the course of the sun, they added, at certain periods, a month to Adar, and called it Ve-Adar. They composed also a cycle of 19 years; in seven of which they inserted the intercalary month, *viz.* in the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. The design of this correction was, to bring the 15th day of Nisan to the equinoctial point, and to regulate the courses of the seasons, and of the feasts, in such a manner, as that the corn might be ripe at the passover, as the law required.

The names and quantities of the months stand thus: 1. Nisan, or Abib, containing 30 days. 2. Jiar, or Zius, 29. 3. Siban, or Siwan, 30. 4. Thamuz, or Tamuz, 29. 5. Ab, 30. 6. Elul, 29. 7. Tisri, or Ethanim, 30. 8. Marchesvan, or Bul, 29. 9. Cisleu, 30. 10. Tebeth, 29. 11. Sabat, or Schebeth, 30. 12. Adar, in the embolismic year, 30. Adar, in the common year, was but 29.

Note.—In the defective year, Cisleu was only 29 days; and in the redundant year, Marchesvan was 30.

Year, *Modern Jewish*, is likewise lunar, consisting, in common years, of 12 months, but of 13 in embolismic years; which in a cycle of 19 years are, the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. Its beginning is fixed to the new moon next after the autumnal equinox.

The names, &c. of the months are, 1. Tisri, containing 30 days. 2. Marchesvan, 29. 3. Cisleu, 30. 4. Tebeth, 29. 5. Schebeth, 30. 6. Adar, 29. 7. Veadar, in the embolismic year, 30. 8. Nisan, 30. 9. Iiar, 29. 10. Sivan, 30. 11. Thamuz, 29. 12. Ab, 30. 13. Elul, 29.

Year, *Syrian*, is a solar year, having its beginning fixed to the beginning of October, in the Julian year; from which it only differs in the names of the months, the quantities being the same, as follows:

1. Tishrin, answering to our October, and containing 31 days. 2. Latter Tishrin, containing, like our November, 30. 3. Canun, 31. 4. Latter Canun, 31. 5. Shabat, 28, or 29 in a leap-year. 6. Adar, 31. 7. Nisan, 30. 8. Aiyar, 31. 9. Haziram, 30. 10. Tamuz, 31. 11. Ab, 31. 12. Elul, 30.

Year, *Olympic*, was of a singular form, the first month commenced at the new moon, that the full moon might fall on the 15th day. Four years of 360 days contain 1440 days; 48 lunations are equal to 1417 days, 11 hours, 14 minutes; a 49th lunation added to the 4th year makes 1447 days, nearly. By this adjustment, the new moon would have happened on the 8th instead of the 1st of the month. To correct this error, two days were added to the last month of every year, the 4th excepted, when one day was added. By these means, the olympic year, which consisted of 362 or 361 days, must have varied 14 days from the course of the sun in the space of an olympiad; and, at the end of 50 years, the games would have been transferred to the winter solstice; but for preventing this deviation, a month was intercalated at certain intervals. Notwithstanding this, a considerable error still remained. The olympic games were regulated by the Cycle *of Clostratus*; which see. See also Olympiad and Epocha.

Year, *Persian*, is a solar year, of 365 days, consisting of 12 months of 30 days each, with five intercalary days added at the end.

The months are as follow: 1. Afrudia meh. 2. Ardihascht meh. 3. Cardi meh. 4. Thir meh. 5. Merded meh. 6. Schabarir meh. 7. Mehar meh. 8. Aben meh. 9. Adar meh. 10. Di meh. 11. Behen meh. 12. Asirer meh.

This year is called the *yezdegerdic* year, to distinguish it from the fixed solar year, called the *gelalean* year, which the Persians began to use in the year 1079, and which was formed by an intercalation made six or seven times in four years, and then once every fifth year.

The yezdegerdic year, it may be observed, is the same with Nabonassar's year, differing from it only in the names of the months, and the commencement of the epocha; for whereas the Nabonassarean began on February 26, this began on June 16. As to the gelalean year, it is absolutely the best and justest of all the civil years yet invented, as being found, by calculation, to keep the solstices and equinoxes precisely to the same days, and answering very accurately to the solar motions; which no other civil year does, not even the Gregorian, for want of so commodious an intercalation. See *Persian* Calendar.

Year, *Arabic*, *Mahometan*, and *Turkish*, called also the year of the *hegira*, (which see,) is a lunar year, equal to 354 days, 8 hours, and 48 minutes, and consisting of 12 months, which contain alternately 30 and 29 days.

Though sometimes it contains 13 months; the names, &c. of which are as follow: 1. Muharram, containing 30 days. 2. Saphar, 29. 3. Rabia, 30. 4. Latter Rabia, 29. 5. Jomada, 30. 6. Latter Jomada, 29. 7. Rajab, 30. 8. Shaaban, 29. 9. Ramadan, 30. 10. Shawal, 29. 11. Dulkaadah, 30. 12. Dulheggia, 29; and in the embolismic year, 30. An intercalary day is added every 2d, 5th, 7th, 10th, 13th, 15th, 18th, 21st, 24th, 26th, 29th, in a cycle of 29 years.

The months commence not from the real new moon, but from its first appearance after conjunction.

Year, *Ethiopic*, is a solar year, perfectly agreeing with the Actiac, except in this, that the names of the month are different. It commences with the Egyptian year, on the 29th of August of the Julian year.

Its months are, 1. Mascaram. 2. Tykympt. 3. Hydar. 4. Tyshas. 5. Tyr. 6. Jacatil. 7. Magabit. 8. Mijazia. 9. Ginbat. 10. Syne. 11. Hamel. 12. Hahase. Intercalary days 5.

Year, *Actian*. See Actian and *Egyptian* Year.

Year, *Attic*. See *Macedonian* Year.

Year, *Canicular*. See Canicular.

Year, *Yezdegerdic*. See *Persian* Year and Calendar.

Year, *Gelalean*. See *Persian* Year and Calendar.

Year, *Nabonassar's*. See *Egyptian* Year and Nabonassar.

Year, *Sabbatic*, *Annus Sabbaticus*, among the ancients, was every seventh year; during which the Jews let their lands lie at rest. Levit. xxv. 8.

Every seventh sabbatic year, *i. e.* every 49th year, was called the *year of Jubilee* (which see); and held with solemnity extraordinary.

Year, *Anomalistical*. See Anomalistical and Year *supra*.

Year, *Climacteric*. See Climacteric.

Year, *Emergent*. See Emergent.

Year, *Enneatical*. See Enneatical.

Year, *Holy*. See Holy.

Year, *Platonic*, or *Great*. See Platonic.

Year *of the Hegira*. See Hegira, and *Arabic* Year.

Year's *Day*, *New*, or the day on which the year commences, has always been very different in different nations; and yet in all has been held in great veneration.

Among the Romans, the first and last day of the year were

were confecrated to Janus; on which account it was that they reprefented him with two faces.

To them we owe the ceremony of wifhing *an happy new year*, which appears to be very ancient. Before the firft day was fpent they not only vifited and complimented each other, but alfo prefented ftrenæ, and offered vows to the gods for the prefervation of each other.

Lucian reprefents it as a practice of a very ancient ftanding, even in his time, and refers it to Numa.

Ovid intimates the fame ceremony in the beginning of his Fafti:

> " Poftera lux oritur, linguifque animifque favete:
> Nunc dicenda bono funt bona verba die."

And Pliny more exprefsly, lib. xxviii. cap. 1. " Primum anni incipientis diem lætis precationibus invicem fauftum ominantur."

In Ruffia at the new year is annually held a feaft of the dead, called Raditzli Sabol, on occafion of which every body vifits the grave of his relations, lays fome victuals upon it, and then hears mafs, in payment for which the priefts get the victuals. In our own country, the ufhering in of the new year, or " New Year's tide," with rejoicings, prefents, and good wifhes, was a cuftom obferved, during the 16th century, with great regularity and parade, and was as cordially celebrated in the court of the prince as in the cottage of the peafant. On the firft day of the new year, prefents, called new year's gifts, were given and received with the mutual expreffion of good wifhes, and particularly that of a " happy new year." The compliment was fometimes paid at each other's doors in the form of a fong; but more generally, efpecially in the north of England and in Scotland, the houfe was entered very early in the morning by fome young men and maidens felected for the purpofe, who prefented the fpiced bowl, and hailed you with the gratulations of the feafon. In the reign of queen Elizabeth, the chief officers of ftate, and feveral of the queen's houfehold fervants, gave new year's gifts to her majefty, confifting, in general, either of a fum of money, or jewels, trinkets, wearing-apparel, &c. The largeft fum given by any of the temporal lords was 20*l*.; but the archbifhop of Canterbury gave 40*l*., the archbifhop of York 30*l*., and the other fpiritual lords 20*l*. and 10*l*. Many of the temporal lords and great officers, and moft of the peereffes, gave rich gowns, petticoats, fmocks, kirtles, filk ftockings, cyprus garters, fweet-bags, doublets, mantles, fome embroidered with pearls, garnets, &c., looking-glaffes, fans, bracelets, cafkets ftudded with precious ftones, jewels ornamented with fparks of diamonds in various devices, and other coftly trinkets. Thefe prefents alfo confifted of books, and appropriate gifts from phyficians, apothecaries, &c. The queen, though fhe made returns in plate and other articles, took fufficient care that the balance fhould be in her own favour. In the country, however, with the exception of the extenfive houfeholds of the nobility, this interchange was conducted on the pure bafis of reciprocal kindnefs and good will, and without any view of fecuring patronage or fupport; it was, indeed, frequently the channel through which charity delighted to exercife her holy influence, and though originating in the heathen world, became fanctified by the Chriftian virtues.

We fhall here add, that the rejoicings on new year's tide were fucceeded by the obfervance of the " Twelfth-day," called, from the idea that the Eaftern magi, who are faid to have vifited our Saviour on that day, were kings, the " Feaft of the Three Kings." The " Twelfth-cake," diftributed on that occafion, was almoft always accompanied by the *waffail bowl*; which fee. Drake's Shakfpeare, vol. i.

YEAR, *Civil*, or *Legal*, in England, formerly commenced on the day of the Annunciation; *i. e.* on the 25th day of March: though the hiftorical year began on the day of the Circumcifion; *i. e.* the firft of January, on which day the German and Italian year alfo begins.

Stowe obferves, that William the Conqueror having been crowned on the firft of January, that henceforth became the firft of the year for hiftorians, &c. though, in all civil affairs, they retained the ancient manner of accounting, which began the 25th of March.

The part of the year between thefe two terms was ufually expreffed both ways, as 1748-9, or 174$\frac{8}{9}$. But by the act for altering the ftyle, the civil year now commences with January 1. See *New* STYLE.

Since the Conqueror, the king's patents, charters, proclamations, &c. are ufually dated by the year of the king's reign.

The church, as to her folemn fervice, begins the year on the firft Sunday in Advent, which is always that next St. Andrew's day, or the 30th of November.

The Jews, as moft other nations of the Eaft, had a civil year, which commenced with the new moon in September; and an ecclefiaftical year, which commenced from the new moon in March.

The month Tifri, which began about the time of the autumnal equinox, was the firft month of the Jewifh year, till it was changed at the time of the coming up of the children of Ifrael out of Egypt. For that happening in the month of Abib, afterwards called Nifan, this month was for this reafon reckoned the firft month of the year in all ecclefiaftical matters. Before this period, Tifri was reckoned the commencement of the year, becaufe it was thought that the world was created and firft began at the time of the autumnal equinox. And for this reafon, the Jews do ftill in their era of the creation of the world, as well as in their era of contracts, compute the beginning of the year from the firft of Tifri, and all their bills and bonds, and all other civil acts and contracts, are ftill dated among them according to the fame computation; and from this month alfo they began all their jubilees and fabbatical years. And therefore, although their ecclefiaftical year began from Nifan, and all their feftivals were computed from it, yet their civil year was ftill reckoned from Tifri, and the firft day of that month was their new year's day; and for the more folemn celebration of it, the feaft of trumpets feems to have been appointed.

The French year, during the reigns of the Merovingian race, began on the day on which the troops were reviewed; which was the firft day of March. Under the Carlovingians it began on Chriftmas-day; and under the Capetians, on Eafter-day; which, therefore, varied between the 22d of March and the 25th of April. The ecclefiaftical year in France begins on the firft Sunday in Advent. But for the civil, Charles IX. appointed, in 1564, that for the future it fhould commence on the 1ft of January.

For an account of the change that took place in the year of France, fee *French* or *Republican* CALENDAR. The French calendar was of no long duration. It was abolifhed in the courfe of thirteen years; and the Gregorian was reftored, and ordered to be ufed in all dates after the 1ft of January, 1806.

The Mahometans begin their year the minute in which the fun enters Aries. The Perfians in the month anfwering to our June. The Chinefe, and moft of the Indians, begin it with the firft moon in March. The Brachmans begin it with the new moon in April, on which day they hold a feaft called *famwat faradi pauduga*, q. d. *feaft of New-year's day*. The Mexicans, according to D'Acofta, begin the year on our

our 23d of February, when the leaves begin to grow green: their year confifts of eighteen months, having twenty days each, which make three hundred and fixty days; the remaining five days are fpent in mirth, and no bufinefs is fuffered to be done, nor even any fervice at the temples. Alvarez relates much the fame of the Abyffinians; who begin their year on the 26th of Auguft, and have five idle days at the end, which they call *pagomen*. At Rome there are two ways of computing the year; the one beginning at the Nativity of our Lord: this the notaries ufe, dating *a Nativitate*. The other on the 25th of March, on occafion of the Incarnation; and it is by this the bulls are dated, *anno Incarnationis*. The Greeks begin their year of the world from the firft of September. See YEAR *fupra*.

Years are alfo diftinguifhed with regard to the epochas whence they are numbered: thus, *years of our Lord*, are thofe reckoned from the birth of Jefus Chrift. *Years of the world*, are thofe elapfed fince the Creation. *Years of Rome, of the Hegira, of Nabonaffar*, &c. See the difference between thefe years, under the article EPOCHA.

YEAR is alfo a word ufed by fome of the chemical writers to exprefs any product of their operations, which may ferve as a medicine, whether internally or externally.

YEAR *and Day*, in *Law*, &c. is a time that determines a right in many cafes, and is in fome an ufucaption, and in others a prefcription.

Thus, in the cafe of an eftray, if the owner, proclamation being made, challenge it not within a year and day, it is forfeit. In like manner is the year and day given in cafes of appeal, of defcent, of entry or claim, of non-claim upon a fine, or writ of right, of the death of a man fore bruifed, or wounded, of protections, effoins in refpect of the king's fervice, of a wreck, and on many other occafions.

YEAR, *Day, and Wafte, Annus, Dies, et Vaftum*, is a part of the king's prerogative, by which he challenges the profits of the lands and tenements of perfons attainted for petit treafon, or felony, for the fpace of a year and a day, whofoever is lord of the manor to which they belong.

Formerly the king had only a liberty of committing wafte on the lands of felons, by pulling down their houfes, extirpating their gardens, ploughing their meadows, and cutting down their woods. But this tending greatly to the prejudice of the public, it was agreed in the reign of Henry I. that the king fhould have the profits of the land for one year and a day in lieu of the deftruction he was otherwife at liberty to commit: and, therefore, Magna Charta provides, that the king fhall only hold fuch lands for a year and a day, and then reftore them to the lord of the fee; without any mention made of wafte. But the ftatute 17 Edward II. *de prærogativa regis*, feems to fuppofe, that the king fhall have his year, day, and wafte, and not the year and day inftead of wafte; which fir Edward Coke, and the author of the Mirror, before him, very juftly look upon as an encroachment, though a very ancient one, of the royal prerogative.

This year, day, and wafte, are now ufually compounded for; but otherwife they regularly belong to the crown: and, after their expiration, the land would naturally have defcended to the heir (as in gavel-kind tenure it ftill does), did not its feodal quality intercept fuch defcent, and give it by way of efcheat to the lord. Black. Com. book iv.

YEAR-*Books*, in *Law*. See REPORTS.

YEARS, *Eftate for*, in *Law*, is a contract for the poffeffion of lands or tenements for fome determinate period: and it happens when a man letteth them to another for the term of a certain number of years, agreed upon between the leffor and the leffee, and the leffee enters thereon.

If the leafe be but for half a year, or a quarter, or any lefs time, this leffee is reputed as a leffee or tenant for years, and is fo ftyled in fome legal proceedings; a year being the fhorteft term which the law in this cafe takes notice of. An eftate of this kind, even for a thoufand years, is only a chattel, and reckoned part of the perfonal eftate; and, therefore, a leafe for years may be made to commence *in futuro*, though a leafe for life cannot.

With regard to emblements, or profits of land fowed by tenant for years, there is this difference between him and tenant for life: that where the term of tenant for years depends upon a certainty, as if he holds from Midfummer for ten years, and in the laft year fows a crop of corn, and if it is not ripe and cut before Midfummer, the end of his term, the landlord fhall have it; for the tenant knew the expiration of his term, and therefore it was his own folly to fow what he never could reap the profits of. But where the leafe for years depends upon an uncertainty; as, upon the death of the leffor, being himfelf only tenant for life, or being a hufband feifed in right of his wife; or if the term of years be determinable upon a life or lives: in all thefe cafes, the eftate for years not being certainly to expire at a time foreknown, but merely by the act of God, the tenant or his executors fhall have the emblements in the fame manner as a tenant for life, or his executors fhall be intitled to it. But not fo, if it determine by the act of the party himfelf; as if tenant for years does any thing that amounts to a forfeiture; in which cafe the emblements fhall go to the leffor, and not to the leffee, who hath determined his eftate by his own default. Blackft. Com. vol. ii.

YEARLINGS, in *Rural Economy*, a term applied to young neat cattle of the heifer kind in the fecond year. It is obferved in the Gloucefterfhire Report on Agriculture, that until within thefe few years, it was there efteemed a bad practice to let them be put fo early to the bull, but that now it is even thought that this method improves them as milkers; and that from the increafed value of ftock, it is advantageous to anticipate a year, as a heifer in calf, at two years old, will be worth nearly as much as it would be if kept three. See LIVE-*Stock*.

YEARN, in *Hunting*, fignifies to bark, as beagles properly do, at their prey.

YEARNING, in *Rural Economy*, a term applied to runnet, ufed for curdling milk in fome places. See DAIRYING and RUNNET.

YEAST, YEST, or *Barm*, the foam or flower of beer, or other liquor in fermentation.

The yeaft of beer is ufed for a leaven or ferment in the making of bread: as ferving to fwell or puff it up very confiderably in a little time, and to make it much lighter, fofter, and more delicate. But when there is too much of it, it renders the bread bitter.

The ufe of yeaft in bread is but of late ftanding among us: it is not above a century fince the avarice of the bakers firft introduced it; and then it was only done by ftealth. Though Pliny witneffes it to have been ufed by the ancient Gauls.

The faculty of medicine of Paris, by a decree of the 24th of March, 1688, folemnly maintained it noxious to the health of the people; yet even that cenfure could not prevent its progrefs.

Common ale-yeaft may be kept frefh and fit for ufe feveral months by the following method: Put a quantity of it into a clofe canvas bag, and gently fqueeze out the moifture in a fcrew-prefs, till the remaining matter be as firm and ftiff as clay.

In this ftate it may be clofe packed up in a tight cafk, for ſecuring it from the air; and will keep freſh, ſound, and fit for uſe for a long time.

This is a ſecret that might be of great uſe to the brewers and diſtillers here, who, though they employ very large quantities of yeaſt, ſeem to know no method of preſerving it, or raiſing nurſeries of it; for want of which they ſuſtain a very conſiderable loſs; whereas the brewers in Flanders make a very great advantage of ſupplying the malt-diſtillers of Holland with yeaſt, which is rendered laſting, and fit for carriage, by this eaſy expedient. Shaw's Lectures.

Mr. Henry has repeatedly prepared an artificial yeaſt, by impregnating flour and water with fixed air, with which he has made very good bread, without the aſſiſtance of any other ferment: and he propoſes this method of procuring freſh fermented bread at ſea.

The proceſs is as follows: Boil flour and water together to the conſiſtence of treacle; when the mixture is become cold, fill a ſmall caſk with it. This caſk is to be filled up in the manner repreſented in *Plate* XV. *fig.* 7. *Pneumatics*, and deſcribed under PYRMONT *Water*, for the impregnation of water with fixed air; and the proceſs is to be conducted in a ſimilar way, except that the caſk is to be agitated as often as the mixture riſes to about two-thirds of the capacity of the funnel *k*; and after each agitation, which ſhould continue during ſeveral minutes, the unabſorbed air is to be let out, by withdrawing the plug from the orifice *m*, till that part of the mixture which remained in the funnel has returned into the caſk. The orifice at *i* ſhould alſo be larger than is neceſſary in the other operations, on account of the ſuperior viſcidity of the mixture. When, after repeated agitation, the mixture which has aſcended into the funnel does not ſubſide into the caſk, it may be ſuppoſed incapable of abſorbing more air.

Pour the mixture, thus ſaturated, into one or more large bottles, or narrow-mouthed jars; cover it over looſely with paper, and upon that lay a ſlate or board with a weight to keep it ſteady. Place the veſſel in a ſituation where the thermometer will ſtand from 70° to 80°, and ſtir up the mixture two or three times in twenty-four hours. In about two days, ſuch a degree of fermentation will have taken place, as to give the mixture the appearance of yeaſt.

With the yeaſt in this ſtate, and before it has acquired a thoroughly vinous ſmell, mix the quantity of flour intended for bread, in the proportion of ſix pounds of flour to a quart of the yeaſt, and a ſufficient portion of warm water. Knead them well together in a proper veſſel, and covering it with a cloth, let the dough ſtand for twelve hours, or till it appears to be ſufficiently fermented, in the above-mentioned degree of warmth. It is then to be formed into loaves and baked.

Mr. Henry adds, that perhaps the yeaſt would be more perfect, if a decoction of malt were uſed inſtead of ſimple water.

When the operation is finiſhed, the caſk, in order to prevent its contracting a diſagreeable taint, ſhould be well waſhed. Henry's Account of a Method of preſerving Water at Sea, &c. p. 26, 1781.

YEAST, *Chemical Properties of.* The nature of yeaſt has been briefly diſcuſſed under the head of FERMENTATION. Since that article was written, however, ſome additional experiments have been publiſhed on the ſubject, which deſerve to be noticed here.

The active and eſſential principle of yeaſt, as obſerved under the article *Fermentation* above alluded to, appears to be a ſpecies of *gluten*. When yeaſt is kept for ſome time in cylindrical glaſs veſſels, a white ſubſtance, not unlike curd, ſeparates and ſwims upon the ſurface. If this ſubſtance be removed, the yeaſt loſes the property of exciting fermentation. This ſubſtance poſſeſſes many of the properties of gluten, though it differs from it in others. Its colour is much whiter. It has not the ſame elaſticity, and its particles do not adhere with the ſame force. It diſſolves more readily in acids. Dr. Thomſon conſiders this as the real fermentative principle, and thinks it may be conſidered as gluten ſomewhat altered, and rendered much more capable of decompoſition. He thinks alſo that it exiſted in the raw grain originally, but underwent conſiderable modifications by the malting proceſs, and perhaps others during the fermentation of the beer from which it ſeparated.

The ſame diſtinguiſhed chemiſt ſtates, in ſupport of this opinion, the experiments of Fabroni and Thenard. Fabroni, by heating the juice of grapes, and paſſing it through a filtre, ſeparated an adheſive matter, which poſſeſſed the properties of gluten, and deprived of which the juice refuſed to ferment, though it fermented as well as uſual when this principle was again added. Thenard likewiſe found in the juices of all the fruits he examined a ſubſtance ſimilar to that deſcribed by Fabroni, and which, according to him, is abſolutely the ſame with pure yeaſt. This ſubſtance is inſipid, does not change vegetable blues, is inſoluble in water, loſes three-fourths of its weight when dried, and is decompoſed like animal ſubſtances. When eight parts of it were diſtilled, they left 2.83 of charcoal, and yielded 1.61 of water, 1.81 of oil, and a quantity of ammonia, which, when ſaturated with muriatic acid, formed 1.46 of muriate of ammonia. The gas obtained weighed 0.33, and conſiſted of one-fifth of carbonic acid, and four-fifths of carburetted hydrogen, requiring $1\frac{1}{2}$ times its bulk of oxygen to conſume it. Nitric acid, even when much diluted, converts it into a ſpecies of tallow. With potaſh it forms a ſoap, while ammonia is diſengaged. When mixed with ſugar and a ſufficient quantity of water, fermentation takes place, carbonic acid is diſengaged, and a vinous liquor formed. By this action, the ferment loſes the whole of its azote, and becomes incapable of exciting fermentation when mixed with a new portion of ſugar. In farther corroboration ſtill of this opinion, Dr. Thomſon adduces an experiment of Kirchhoff, which he thinks throws conſiderable light on the nature of yeaſt. Barley-meal contains both gluten and ſtarch. Pure ſtarch infuſed in hot water is not converted into ſugar; nor does gluten become ſaccharine matter when heated in the ſame manner. But if a mixture of pure dried pulverized wheat-gluten and potatoe-ſtarch be infuſed in hot water, the ſtarch is converted into ſugar. During the proceſs an acid is ſaid to be evolved. The gluten is little changed in appearance or quantity, and may moſt of it be ſeparated by filtration. What is ſingular, however, it is incapable of inducing the ſame change upon ſtarch a ſecond time.

The following are the conſtituents of yeaſt, according to Weſtrumb, as quoted by Dr. Thomſon. From 15.360 parts he obtained,

Potaſh	13
Carbonic acid	15
Acetic acid	10
Malic acid	45
Lime	69
Alcohol	240
Extractive	120
Mucilage	240
Saccharine matter	315
Gluten	480
Water	13.595
	15.142

Besides some traces of phosphoric acid and silica. But it is evident, as Dr. Thomson observes, that all these ingredients are not essential, and he considers the gluten only as deserving that appellation.

Some of the French chemists have considered the principle of fermentation to reside in an imperfect species of sugar, which they have denominated the *sweet principle*, and which they state to exist in combination with real sugar in all fruits containing that principle. This *sweet principle* they suppose to differ from pure sugar, in being incapable of crystallizing. A familiar example of it we have in *treacle* or *molasses*, which, according to them, is the *sweet principle* of the sugar-cane. This doctrine, however, has not met with many adherents; for, as Dr. Macculloch observes, although chemistry has not hitherto discovered the means of separating the sugar from the *sweet principle*, the results of fermentation leave no doubt that the latter consists of sugar combined with the vegetable extractive matter, or gluten, as it is denominated by most chemists. Thus molasses consists of a certain portion of *real sugar*, in such a state of combination with a variety of substances, and the fermentative principle among the rest, that it cannot be made to crystallize or be otherwise obtained in a separate state. This is demonstrated by the well-known fact, that molasses may be made to undergo the fermentative process, and to yield alcohol, in precisely the same manner as a simple mixture of sugar and yeast. The sweet principle of molasses, therefore, must be in fact nothing else than sugar, unless we suppose two different substances capable, by the same means, of producing the same result, which is totally unprecedented in chemistry, besides being in itself extremely improbable.

Upon the whole then, in the present state of our knowledge, we are obliged to conclude that the essential principle of yeast, or the real fermentative principle, is either identical with gluten, or closely allied to it. Of its real nature, however, and *modus operandi*, we are totally ignorant, and shall probably long remain so.

The yeast of beer is that most generally employed, and is of the utmost importance in the manufacture of bread, and of fermented liquors from malt. If carefully dried and preserved from moisture, it retains its properties for a long time, and it is a pity this practice is not more generally resorted to, as fluid yeast in warm weather soon becomes acescent and putrid, and not only loses its properties, but imparts a most disagreeable flavour to the bread, &c. with which it is mixed. Yeast may be readily dried by first separating its watery parts as much as possible, and afterwards exposing it in shallow vessels to the air, or to a gentle heat in a stove. In this way, it may be obtained in thin laminæ, and requires only to be preserved in close vessels in a dry place, when it will be always ready for use, by diffusing it in a little warm water. A popular method of preserving yeast is by drying it upon bunches of twigs. See Bread, Brewing, Fermentation, and Wine.

Yeast, *Medicinal Properties of*. Yeast has been highly extolled as an antiseptic remedy in diseases, when a putrid diathesis was supposed to prevail; as in low typhus fevers, gangrene, &c. A good method of exhibiting it is, to mix one or two table-spoonfuls of it with a quart of infusion of malt or mild porter, and to take a wine-glassful of this mixture frequently. Many practitioners also have spoken highly of the good effects of a fomenting poultice composed partly of yeast, when applied to foul and gangrenous ulcers. The good effects of this remedy, if in reality it possesses any, may probably be attributed to the carbonic acid gas generated by its agency. See Fever.

YEATS, Mrs., in *Biography*, the celebrated tragic actress, who, in conjunction with Mrs. Brooke, the novelist, a lady of considerable literary merit, undertook, in 1773, at all risks, the conduct and government of the opera, and all its dependencies; an enterprise for which they were but sparingly qualified. In the first place, Mrs. Yeats, though possessed of strong natural parts, and an inherent spirit of government, knew no language but English, was ignorant and indifferent about music, dancing, painting, machinery, and decorations. She and her husband had saved a considerable sum by their salaries and benefits at our national theatres, and in hopes of accumulation previous to retirement, they quitted employments for which they were extremely well fitted, and in which their success was certain, to govern a most froward family by deputation, at the extreme hazard of being ruined.

Mrs. Brooke, who had resided some time at Quebec, after its conquest, with her husband, the Rev. Dr. Brooke, chaplain to the army in that colony, indeed knew French, had a good taste in books, and wrote in a good style; but was ignorant of music, and totally unacquainted with all opera concerns. Yet it was during this female regency, that the best composers, the greatest singers, and the most capital and renowned dancers, were engaged: for during nine years, from 1773 to 1782, we had Sacchini, Truetta, and Anfossi, to compose; Pacchierotti, Ansani, and the Gabrielli, to sing; and Madlle. Heynel, the Vestris, and Le Picq, to dance.

Mrs. Yeats did not enrich herself by her opera sovereignty; but she had the address to escape ruin. And Mrs. Brooke, who risked no property, lost no reputation by imprudence, or the want of talents in the persons she engaged.

YECATY, in *Geography*, a town of Hindoostan, in Mysore; 20 miles N. of Seringapatam.

YECORA, a town of New Mexico, in the province of Hiaqui; 50 miles E. of Riochico.

YEDACOTTA, a town of Hindoostan, in Mysore; 15 miles N. of Dindigul.

YEDAPADY, a town of Hindoostan, in the Carnatic; 8 miles N. of Sankeridurgam.

YEDAPILLY, a town of Hindoostan, in Mysore; 2 miles N.W. of Vencatighery.

YEDDIMUNGALUM, a town of Hindoostan, in the Carnatic; 18 miles E. of Tanjore.

YEDKAST. See Jezdkast.

YEGUE Hotun, a town of Chinese Tartary; 418 miles E.N.E. of Peking. N. lat. 43°. E. long. 124° 19'.

YEHENAGUR, a town of Hindoostan, in Lahore; 15 miles N.N.E. of Jallindar.

YEHUNGSCHAUL, a town of Hindoostan, in Lahore; 40 miles W.N.W. of Lahore.

YELASURAM, a town of Hindoostan, in Palnaud; 20 miles W.S.W. of Timerycotta.

YELCHORE, a town of Hindoostan, in the circle of Guntoor; 3 miles N.E. of Innaconda.

YELCOUR, a town of Hindoostan, in the Carnatic; 15 miles N. of Chittoor.

YELDOOR, a town of Hindoostan, in Mysore; 12 miles N.E. of Colar.

YELFOLA, a town of Spain, in Galicia; 18 miles N. of Santiago.

YELION, a word used by some of the barbarous writers to express glass.

YELL Island, in *Geography*, one of the Shetland islands, 20 miles long, and about 7 broad, but intersected by a number of bays, by the inhabitants called Voes, which afford good harbours. The principal part of the arable land is confined to the neighbourhood of the coast; the inland parts are mountainous,

tainous, and covered with peat mofs: there is but little heath, but abundance of a rough fort of grafs called *lubbo*, which grows naturally, and affords tolerable pafture for fheep, horfes, and black cattle. Though the crops raifed are not fufficient for above eight months' confumption, yet the inhabitants, by the advantage of having plenty of fuel, and catching immenfe quantities of fmall fifh, live comfortably, and as well as the generality of the peafants of Scotland. N. lat. 60° 56'. W. long. 1° 20'.

YELLAGOOD, a town of Hindooftan, in Golconda; 45 miles S.E. of Canoul.

YELLAMOODY, a town of Hindooftan, in the province of Madura; 25 miles W. of Madura.

YELLANG, a town of Burmah; 14 miles S. of Mellone.

YELLOOR, a town of Hindooftan, in Baramaul; 6 miles N.N.W. of Namcul.

YELLOW, a bright colour, reflecting the moft light of any after white. See COLOUR.

The word is formed from the Italian *giallo*, or the German *geel*, which fignifies the fame; or from the Latin *galbanus*, *bright*, *gay*.

There are divers yellow fubftances that become white, upon wetting and drying them again feveral times in the fun: fuch as wax, linen cloth, &c. (See BLEACHING.) And the fame bodies, if they be already white, and continue a long time in the air without being wetted, turn yellow.

Paper and ivory, applied near the fire, become fucceffively yellow, red, and black. Silk, when turned yellow, is whitened again with the fumes of fulphur.

YELLOW, in *Dyeing*, is one of the five fimple and mother colours. See COLOUR.

The only materials ufed by the calico-printers for the production of fine yellows are the quercitron-bark (fee QUERCUS), and the *Weld*, or *Refeda Luteola*, which fee. In order to obtain calicoes of the fineft yellow or more delicate lemon colour, it is neceffary to dry the pieces in the open air, as the ftove would not fail to injure fuch colours; ftove-drying having a tendency to change a yellow into an orange. In the operation of dunging the mordants for thefe pale yellows, care fhould be taken that it be not done at a higher temperature than 96° or 100°, as fuch a high temperature would impair their beauty. But befides, by dunging at this low temperature, the dyeing may be completed at about 110°, which will give a much livelier colour than if a higher temperature had been employed. For all the different fhades of reds and yellows, the mordant employed by calico-printers is the acetate of alumine; which is prepared by a mixture of the fulphate of alumine with acetate of lead, both in a ftate of folution; fo that, on the theory of double decompofition, fulphate of lead is formed, which precipitates while the acetate of alumine remains in folution. Of late this article has been prepared from the pyroligneous acid, by means of lime and alum, in the following manner:—The pyroligneous acid is firft paffed through a ftill, to diveft it of a portion of the tar which is always diffolved in it: it is then faturated with lime or whiting; and the acetate of lime thus formed is decompofed by a heated folution of fulphate of alumine. The refult of this double decompofition is fulphate of lime, which precipitates, and acetate of alumine, which is drawn from the fediment of the calcareous fulphate, and preferved for ufe. Mr. Parkes cautions the manufacturer againft the ufe of lime in the procefs for making acetate of alumine; and he fays that the true mode of making it, though more expenfive, is that recommended by Berthollet, which confifts in decompofing fulphate of alumine by means of faccharum faturni, or acetate of lead. Mr. Parkes mentions a method of producing yellows on calico, which, though not often practifed, has neverthelefs a very good effect. The procefs is as follows:—A ftrong decoction of bark, thickened with gum tragacanth, is to be mixed with a portion of very pure muriate of tin; and this, when printed with the ufual management, will produce a colour of great brightnefs and durability. This mode poffeffes one very important advantage; *viz.* that if it fhould be neceffary to pad a piece in diluted acetate of alumine to obtain a pale lemon ground, the yellow figures previoufly done by the above procefs will not give out any part of their colour to the fecond mordant; whereas, whenever a ftrong yellow has been produced in the common way, the pattern is very apt to fpread, and to become irregular, and often to ftain the ground, when the piece comes a fecond time into the acetate of alumine. Parkes's Eff. vol. ii.

Turmeric likewife gives a good yellow, though not the beft.

Woollen cloth, impregnated with a folution of alum and tartar, acquires on being boiled with the watery decoction, an elegant, but not very durable orange-yellow or gold-coloured dye. It is rarely made ufe of by the dyers, on account of its price, and the perifhablenefs of its colour.

There is alfo an Indian wood that gives a yellow colour bordering on gold. This wood, called *fuftick*, is a fpecies of mulberry-tree, of a deep fulphur-yellow colour, which it readily gives out both to water and fpirit. The watery decoction dyes prepared woollen of a very durable orange-yellow: the colour is imbibed by the cloth in a moderate warmth, without boiling.

The *fuftet* or *fuftel* of the French is a yellow wood or root, very different from our fuftick: it gives a fine orange dye to woollen, but the colour is extremely perifhable in the air. This is called *cotinus coriaria*, or *Venice fumach*.

The leaves of many kinds of herbs and trees give a yellow dye to wool or woollen cloth that has been previoufly boiled with a folution of alum and tartar. There is, indeed, no colour for which we have fuch plenty of materials as for yellow.

Mr. Hellot obferves, in his Art de Teindre, that all leaves, barks, and roots, which on being chewed difcover a flight aftringency, as the leaves of the almond, peach, and pear trees, afh-bark (efpecially that taken off after the firft rifing of the fap in fpring), the roots of wild patience, &c. (fee LEAF), yield durable yellows, more or lefs beautiful, according to the length of time that the boiling is continued, and the proportions of alum and tartar in the preparatory liquor: that a large quantity of alum makes thefe yellows approach to the elegant yellow of weld; that if the tartar is made to prevail, it inclines them to an orange; and that if the roots, barks, or leaves, be too long boiled, the yellow proves tarnifhed, and acquires fhades of brown. Neumann's Chemical Works, by Lewis, p. 384. 434.

The Chinefe are famous for their yellows in dyeing, which never change with wafhing. They make this dye of the flowers of the acacia, in a manner in which we might ufe feveral of our productions to a great advantage.

It is thus: they gather the flowers before they are perfectly ripe, and dry them in an earthen veffel over a gentle heat, till they crifp up in the manner of tea-leaves: they then add to them the ripe feeds of the fame tree in different proportions; and then boiling them in river water with alum, they give the yellow in any degree that they pleafe.

They have three kinds of yellow, which they diftinguifh by the names of *Ngo-hoang*, *king-hoang*, and *hoang* alone.

The firft of thefe is the brighteft yellow: to dye five or fix ſix ells of ſilk of this colour, they uſe a pound of the flowers of the acacia, about two ounces of the ſeeds, and four ounces of alum.

The *king-hoang* is a ſomewhat deeper yellow: to dye this, they uſe the ſame ingredients in the ſame proportion as in the former caſe; and when the ſilk is dry from the dipping in this, they give it a ſecond dipping in a ſlight tincture of Braſil wood: this brings it to the fine ſtrong yellow we ſee.

The *hoang*, or pale yellow, is made of the ſame ingredients as the firſt, only inſtead of four ounces of alum they put in but three ounces: river water is found to be greatly preferable to any other for the extracting of theſe colours; but even in that there is great difference, ſome doing the buſineſs much better than others.

The Chineſe are ſo expert in judging on this occaſion, that they can tell by the taſte of water whether it will or will not do; and if it taſte faint they know it is faulty; but they dip the pieces twice into it inſtead of once, and the colour ſucceeds well.

The flowers of the acacia, when they have been prepared by roaſting in this manner, may be kept all the year round, and employed in dyeing as occaſion requires, only there is to be longer boiling for the dried flowers than the freſh ones; and it is always found that the freſh flowers give the brighteſt colour. Obſ. ſur les Coutum. de l'Aſie, p. 254.

Greens are uſually made of yellow and blue mixed. With yellow, madder red, and goat's-hair prepared with madder, are made the golden yellow, Aurora, panſy, nacarate, Iſabella, and chamois colour, which are all caſts or ſhades of yellow.

Mr. Peter Woulfe has given the following receipt for making the yellow dye:—Take half an ounce of powdered indigo, and mix it in a high glaſs veſſel, with two ounces of ſtrong ſpirit of nitre, which ſhould be previouſly diluted with eight ounces of water, for preventing the indigo's being ſet on fire by the ſpirit; becauſe two ounces and a half of ſtrong ſpirit of nitre will ſet fire to half an ounce of indigo: let the mixture ſtand for a week, and then digeſt it in a ſand-heat for an hour or more, and add four ounces more of water to it; filtre the ſolution, which will be of a fine yellow colour. If the indigo be digeſted twenty-four hours after the ſpirit of nitre is poured upon it, it will froth and boil over; but after ſtanding about a week, it has not that property.

One part of the ſolution of indigo in the acid of nitre, mixed with four or five parts of water, will dye ſilk or cloth of the paleſt yellow colour, or of any ſhade to the deepeſt, and that by letting them boil more or leſs in the colour. The addition of alum is uſeful, as it makes the colour more laſting: according as the ſolution boils away, more water muſt be added. None of the colour in the operation ſeparates from the water, but what adheres to the ſilk or cloth; and conſequently this colour goes far in dyeing.

Cochineal, Dutch litmus, orchil, cudbear, and many other colouring ſubſtances treated in this manner, will all dye ſilk and wool of a yellow colour.

The indigo which remains undiſſolved in making Saxon blue, and collected by filtration, if digeſted with ſpirit of nitre, dyes ſilk and wool of all ſhades of brown, inclining to a yellow.

Cloth and ſilk may be dyed green with indigo; but they muſt firſt be boiled in the yellow dye, and then in the blue. Phil. Tranſ. vol. lxi. part i. p. 129, &c. See DYEING.

Painters and enamellers make their yellow of maſſicot, or, as ſome write it, maſticot, which is ceruſſe raiſed to a yellow colour by the fire; or with yellow ochre. Limners and illuminers make it with ſaffron, French berries, oreanette, &c.

Mr. Boyle tells us a moſt beautiful yellow may be procured by taking good quickſilver, and three or four times its weight of oil of vitriol, drawing off, in a glaſs retort, the ſaline menſtruum from the metalline liquor, till there remains a dry ſnow-white calx at the bottom: on pouring a large quantity of fair water on this, the colour changes to an excellent light yellow.

He ſays he fears this colour is too coſtly to be uſed by painters, and he does not know how it would agree with every pigment, eſpecially oil colours. Works abr. vol. ii. p. 91. See VITRIOL.

Branton obſerves, that it was anciently the cuſtom to paint a man's door yellow, and ſtrew his houſe with ſalt, to declare him a traitor to his king.

YELLOW *and other Colouring Matters of Flowers*, in *Rural Economy*, the different colouring matters thus produced. The nature of the colouring matters of flowers has not yet been much examined into. Such colouring matters are in general very tranſient, eſpecially thoſe of the blue and red kinds. The yellow colouring matters of this ſort are ſaid to be the moſt permanent. It is noticed by a late writer, that the carthamus contains a red and a yellow colouring matter; that the yellow is eaſily diſſolved by water; that from the red, rouge is prepared by a proceſs which is kept ſecret; that the colours of moſt flowers are changed by alkalies to green, and by acids to red; that an imitation of the colouring matter may be made by digeſting ſolutions of gall-nuts with chalk; a green fluid is produced, which becomes red by the action of an acid; and that has its green colour reſtored by means of alkalies.

YELLOW *Copper*, in *Mineralogy*, copper pyrites. See COPPER *Ores*.

YELLOW *Earth*, a ſoft yellow mineral ſubſtance, found at Wehraw, in Upper Luſatia, aſſociated with clay and argillaceous iron-ſtone: it is ſometimes uſed as a yellow pigment. The characters given of this ſubſtance do not ſeem to entitle it to be regarded as a different ſpecies from ſome of the ochreous clays which occur in the coal-ſtrata in England. It is claſſed by profeſſor Jameſon with the lithomarge family, and is thus deſcribed by him. Its colour is ochre-yellow, of different degrees of intenſity; it occurs maſſive; it is dull in the croſs fracture, but glimmering in the principal fracture. In the large, the fracture inclines to ſlaty; in the ſmall, the fracture is earthy. The fragments are tubular, or indeterminately angular. It becomes ſhining in the ſtreak; it is opaque and very ſoft, paſſing into friable; it ſoils the fingers ſlightly, and adheres to the tongue; its feel is rather greaſy; it is rather light, but the ſpecific gravity is not given. Before the blow-pipe, yellow earth is converted into a black and ſhining enamel. We have no analyſis of this earth.

YELLOW *Tellurium Ore*, an ore of tellurium, hitherto found only at Nagyag, in Tranſylvania. See TELLURIUM.

YELLOW *Cow-Wheat*, in *Agriculture*. See WEED.

YELLOW *Dead Nettle*. See WEED.

YELLOW *Devil's Bit*. See WEED.

YELLOW or *French Berries*. See AVIGNON, and LYCIUM.

YELLOW *Fever*, an epidemic diſeaſe of frequent occurrence in America and the Weſt Indies. See FEVER, *Yellow*.

Veſſels arriving in Great Britain or Ireland, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man, from places where the yellow fever is known to exiſt, or where it is deemed likely to break out, are ſubjected by various laws and orders of his majeſty in council to the reſtraint of quarantine; the ſame as ſhips arriving from countries ſubjected to to the *Plague*, for the details of which, fee that article in the *Addenda*.

YELLOW-*Hammer*, in *Ornithology*, the name of a very common Englifh bird, called by authors *emberiza lutea;* and by Linnæus *emberiza citrinella;* and by fome *hortulanus;* by others *luteus;* and by others *chloreus*.

The bill is of a dufky hue; the crown of the head is of a pleafant pale yellow; in fome almoft plain, in others fpotted with brown; the hind-part of the neck is tinged with green; the chin and throat are yellow; the breaft is marked with an orange-red; the belly yellow; the leffer coverts of the wings are green; the others dufky, edged with ruft colour; the back of the fame colours; the rump of a rufty red; the quill-feathers dufky, edged on their exterior fides with yellowifh-green; the tail is a little forked; the middle feathers are brown; the two middlemoft edged on both fides with green, the others on their exterior fides only; the interior fides of the two outmoft feathers are marked obliquely near their ends with white.

This fpecies makes a large flat neft on the ground, near a bufh or hedge, of mofs, dried roots, and horfe-hair: it lays fix eggs, of a white colour, with dark purple veins; and in winter frequents our farm-yards with other fmall birds. Pennant.

There is befide this another kind, which is much fmaller, and of a browner colour on the back; this is called by fome authors *zivolo*.

YELLOW *Hawkweed*, in *Agriculture*. See WEED.

YELLOW *Jaundice*, in *Medicine*. See JAUNDICE.

YELLOW, *King's*, is a pure orpiment, or arfenic coloured with fulphur, ufed for painting in oil and varnifh; of an extreme bright colour, and when good a true yellow: when ufed alone, it will ftand well; but mixed with white lead, and feveral other pigments, its colour flies or changes. It is fometimes mixed with blue pigments, to form a green colour. This pigment may be prepared by mixing fulphur and arfenic by fublimation: taking of arfenic powdered, and flowers of fulphur, in the proportion of twenty parts of the firft to one of the fecond, and putting them into a fublimer, and fubliming them in a fand-heat by means of a furnace particularly adapted to the purpofe. When the operation is completed, the king's yellow will be found in the upper part of the glafs, which muft be feparated with care from any foul parts adhering to it in the glafs, and levigated into an uniform powder. It may be alfo obtained from common orpiment by fubliming it in the fame manner. This pigment may be rendered warmer, or more inclined to orange, by increafing the proportion of the fulphur, and *vice versâ*. Handmaid to the Arts, vol. i. p. 17.

YELLOW *Ladies' Bed Straw*. See WEED.

YELLOW *Meat*, in *Rural Economy*, that which is much tinged with a yellow colour. It is faid to be a peculiar property in fome forts of animals, of both the fheep and cattle kinds, to afford meat which has a yellow caft or appearance.

It is fuggefted that this defect muft be hereditary, as no pafture or particular food can either produce or remove it, as fheep which have been tried in the manner here defcribed and found yellow have been fent to the Thames marfhes, kept there a year, and when flaughtered have proved as yellow as gold. It may probably depend upon fome phyfiological principle, which mere examination after death has not yet fhewn. Thefe remarks are equally applicable to beef as mutton, and are the refult of information on the fubject derived from a well-experienced Smithfield falefman.

YELLOW, *Naples*. See GIALLOLINO.

YELLOW *Oat-Grafs*, in *Agriculture*, a fort of grafs which thrives well in meadows and paftures, as well as upon hills where the foil is of a calcareous nature, flowering in the middle of fummer. It is a rather coarfe grafs, which, though tolerably fweet, is thought by many to be much inferior to the meadow and fefcue graffes; and which Withering has afferted not to be relifhed by cattle; but which Swayne thinks one of the beft graffes of this kind for the ufe of the farmer.

The proportional value which the grafs, at the time the feed is ripe, bears to that at the time of flowering, is as 9 to 15.

The proportional value which the grafs of the latter-math bears to that at the time of flowering, is as 5 to 15; and to that at the time the feed is ripe, as 5 to 9.

It is remarked, that this fpecies of grafs is pretty generally cultivated in many diftricts and parts of this country; and that it would appear from the above details to be a valuable grafs, though inferior to many others. See AVENA *Flavefcens*, GRASS, and GRASS-*Land*.

YELLOW *Ochre*. See OCHRE.

YELLOW *Rattle*. See WEED.

YELLOW *Scour* or *Milk*, a difeafe in lambs, which takes place while they are young, and in which they appear quite dull and fpiritlefs; their ears inftead of being upright lie flat and afunder on their heads; they are very lank in the fides and bellies, and their breathing is very fhort and unequal. Thefe appearances are fucceeded by a purging of a yellowifh milky coloured matter, which, in fome cafes, has come on before the difeafe is noticed; but at other times, the lambs die without having had any or only a flight difcharge of excrement. The body or carcafe appears well fed; the excrement in the inteftines, which laft are fometimes in fome degree fwelled, refembles in colour that paffed at the anus, while the ftomach is particularly full of coagulated milk.

It is a difeafe which never appears or fhews itfelf in hard feafons, but only when the weather is warm, growing, and genial, and there is great plenty of new grafs. In general it does not affect them after they are three weeks old. It is moftly afcribed to their fucking more milk than they can digeft; and it is even faid, that they not unfrequently fuck until their ftomachs burft.

The lambs being young, and of little value, remedies to prevent or remove the difeafe are feldom tried; but thofe of the aromatic cretaceous kind, with a little opium, may often be ufed with much advantage in preventing and curing the complaint.

YELLOW *Vetchling*, in *Agriculture*, a plant of the tare kind, that may be cultivated by the farmer in many cafes with profit. The writer of the Effays on Rural Affairs ftates, that it grows with great luxuriance on ftiff clayey foils; that it continues annually, for any length of time, to afford a great weight of produce, which is of the very beft quality; that it is equally fit for pafture herbage or for hay, and that it may be applied to one or other of thefe purpofes at any period as convenient; that it has likewife this advantage, that as it continues to grow with equal ftrength in the end as in the beginning of the fummer feafon, it may admit of being paftured upon in the early fpring, when neceffary, without endangering the lofs of the hay-crop, which cannot be the cafe with any other plant ufually cultivated, except clover, which is unfit both for early pafture and for hay; and that it is ftill more valuable, as growing to the greateft perfection on fuch foils as are wholly unfit for producing fain-foin, the only fort of plant yet cultivated in the

the field, which seems to have qualities approaching to those of this plant.

The principal objection to its cultivation is the difficulty of procuring the seeds of it in plenty, which may probably be obviated by proper management. It is, however, an abiding plant, and one which increases fast by its running roots, and which may readily be propagated in this way in the field. See LATHYRUS *Pratensis*.

YELLOW-*Berry Wash*, is a solution of the gum of the French berries in water; and may be prepared by boiling a pound of the berries in a gallon of water with half an ounce of alum, in a pewter vessel, and filtering the fluid; and by evaporating the fluid in the boiler till the colour appears to be of the requisite degree of strength.

This is used as a washing colour in water-painting: it will stand extremely well, and being more diluted, or laid on thicker, will, in consequence of its transparency, give a variety of shades.

YELLOW *Wash of Saffron*. See *Tincture of* SAFFRON.

YELLOW *Wash of Turmeric*. See TURMERIC.

YELLOW *Breeches Creek*, in *Geography*, a river of Pennsylvania, which runs into the Susquehanna, N. lat. 40° 13'. W. long. 76° 52'.

YELLOW *Creek*, a township of Ohio, in the county of Columbiana, with 491 inhabitants.—Also, a river of America, which runs into the Ohio, N. lat. 40° 34'. W. long. 80° 44'.

YELLOW *River*, a small river of Ireland, in the King's county, which joins the river Boyne.

YELLOW *River*. (See HOANG.) Mr. Barrow, supposing, without the possibility of exaggeration, that the breadth of the Yellow river, where Macartney's embassy passed it, about 70 miles from the sea, was only three-fourths of a mile, the mean depth five feet, and the velocity of its course four miles an hour, concludes, from these data, that the river discharges into the Yellow sea, in every hour, a volume of water equal to 418,176,000 solid feet, or 2,563,000,000 gallons of water, or 1100 times as much as appears to be furnished by the Ganges. By another computation, he estimates the quantity of mud wafted into the sea by this river in every hour to be equal to 2,000,000 solid feet, or 48,000,000 in every day, or 17,520,000,000 in every year. Supposing the mean depth of the Yellow sea to be 20 fathoms, or 120 feet, the quantity of earth brought down by the Yellow river would, if accumulated together, be sufficient to fill up, even to the surface of the sea, an island one mile square in 70 days. By extending the calculation, a curious inquirer may find in what space of time the Yellow sea itself might be filled up by the successive depositions from the Yellow river alone; for supposing that sea to extend northward from that river, and to include the gulfs of Pe-che-lee and Leao-tong, the number of square miles on the surface of this extent would be about 125,000, which, multiplied by the number (70) of days necessary for consolidating one mile square, would make 8,750,000 days, or 24,000 years.

The velocity of the Yellow river at the place where the embassy crossed it was so great, as to require, agreeably to the superstitious notions of the Chinese crews, a sacrifice to the spirit of the river, in order to ensure a safe passage over it. With this view, the master presented a cock, and having wrung off his head, which he threw into the sea, consecrated the vessel with the blood spouting from the body, by sprinkling it upon the deck, the masts, the anchor, and the doors of the apartments, and stuck upon them a few of the feathers of the bird. Various kinds of provisions were then ranged across the deck; and when the captain had made three profound inclinations of the body with his hands uplifted, he muttered a few words, as if of solicitation to the Deity. The loo, or brazen drum, was in the mean time beaten forcibly; lighted matches were held towards heaven; papers, covered with tin or silver-leaf, were burnt; and crackers fired off in great abundance by the crew. The captain afterwards made libations to the river, by emptying into it from the vessel's prow the several cups of liquids which he had provided, and concluded with throwing in also that which held the salt. All the ceremonies being finished, and the bowls of meat removed, the people feasted on it; and afterwards launched with confidence the yacht into the current. As soon as she had reached the opposite shore, the captain returned thanks to heaven, with three inclinations of the body. Sacrifices are also offered to obtain a fair wind, and to avert any impending danger.

Besides these offerings, great exertions were necessary to overcome the violence of the Yellow river, and to transport large yachts in safety to the opposite shore. Embassy to China, vol. ii.

YELLOW *Sea*, an extensive but shallow inland sea between Corea and China, hardly any where exceeding forty-five fathoms in depth, and often not more than twenty; with a bottom of clay or mud: the alluvion, without doubt, of the rivers that are poured into it from the mountains and plains of China. See LEAO-TONG.

YELLOWS, in *Animals*, is a disease which is incident to horses, neat-cattle, and sheep, in which there is a yellow jaundice-like appearance, especially in the eyes.

It is a disease that takes place in horses in all states of them, but which in those of the young kind is often unaccompanied with fever, or any sort of irritation.

It shews itself by a particular yellowness in the eyes and the inside of the mouth, with a considerable degree of constipation of the bowels in some cases.

The complaint is frequently much relieved by the use of a ball composed of one ounce of aloes in powder, with one drachm of calomel, and half an ounce of Castile soap, made up with a sufficient quantity of treacle; and the second morning afterwards giving one constituted of half an ounce each of nitre, resin, and Castile soap, made up with honey; and if the yellowness should continue in the eyes and mouth, repeating the latter after an interval of four days.

Some, however, advise to have first recourse to bleeding, clysters, and purges; in the last of which intentions the composition directed below may be found useful: One ounce and a half of Indian rhubarb, two drachms of saffron, and six drachms of soccotrine aloes, formed into a ball with syrup of buckthorn. But if the rhubarb should be thought too expensive, it may be omitted, and the same quantity of cream of tartar, and half an ounce of Castile soap, with four drachms more of aloes, be added. This may be repeated two or three times, giving intermediately the remedies directed below: Half an ounce of Æthiops' mineral, and one ounce of Castile soap, formed into a ball, and one of them given every day, washing it down with a pint of the following decoction: Madder and turmeric-root, each four ounces; burdock-root sliced, half a pound; monk's rhubarb, four ounces; and liquorice sliced, two ounces; boiled in one gallon of forge-water to three quarts; the liquor then strained off, and sweetened with honey.

In this disease, balls of Castile soap and turmeric alone are likewise often had recourse to, even to the quantity of three or four ounces or more in the day; and not unfrequently succeed in recent cases.

By means of this sort, the disease for the most part abates

abates in the courſe of a week or ten days, which may be known by the alteration in the eyes and mouth of the horſe; but the remedies are to be continued until the yellowneſs is wholly removed. Should, however, the diſeaſe prove obſtinate, and not give way to ſuch modes of treatment, it will be neceſſary to have recourſe to more powerful remedies, ſuch as thoſe of the mercurial purging kind, repeated two or three times at proper intervals, and then to give the balls compoſed of the ſubſtances directed below: Two ounces of ſalt of tartar, four ounces of cinnabar or antimony, three ounces of filings of ſteel, and ſoap half a pound, formed with honey into balls the ſize of a pullet's egg, giving one night and morning in a pint of the above decoction drink.

On the recovery of the horſe, ſome adviſe two or three mild purges; and if he be ſtrong and fat, to put in a rowel.

He ſhould have maſhes and warm water frequently, and be exerciſed daily, and warmly covered with cloths.

In order to prevent a relapſe, the firſt purging-ball may ſometimes be uſed with great advantage; and a powder formed of the following ingredients be mixed, with the feeds of corn every night for a fortnight: Æthiops' mineral, nitre, and aniſeeds, each half an ounce, mixed together.

Salt-maſhes, too, have often been found very uſeful in the cure of this diſorder, and when taken in time rarely fail in reſtoring the animal.

The yellows in neat-cattle is a common diſeaſe, ariſing from obſtruction in the gall-ducts, and conſiſts in a diffuſion of the obſtructed bile through the whole body of the animal. It is firſt diſtinguiſhed in the white of the eyes, which has a particular yellow appearance; and as it increaſes, the whole of the ſkin becomes tinged with the ſame yellow colour: but the ears, tail, eyes, and mouth, are the parts in which it is the moſt conſpicuous. The animals are affected with great weakneſs and debility in every ſtage of the diſeaſe, and there is a liſtleſſneſs, with indiſpoſition to move, and a want of appetite for their food. When in the paſtures, they moſtly wander about by the ſides of the hedges, or other fences, in a lonely manner. Milch cows are particularly ſubject to the diſeaſe in the ſpring and at the fall of the year; though they are not exempt from having it at all other ſeaſons. The moſt unfavourable ſtate of the diſeaſe is when it proceeds from an induration of ſome part of the liver, as there is then but little hope of the diſeaſe being permanently removed. As the changing ſtate of the weather has often a great effect in retarding or haſtening the removal of the diſeaſe, care ſhould be taken to houſe the animals in all unfavourable ſeaſons.

On the firſt appearance of the diſeaſe, it may often be removed by the compoſition directed below: Salt of tartar, Caſtile ſoap, and grains of Paradiſe, each one ounce; turmeric-root, and coriander-ſeeds, in powder, each two ounces; the whole being made into a drink, by pouring three pints of hot ale upon the ingredients in a proper cloſe veſſel, firſt ſlicing the ſoap in a thin manner, and covering them well up until they become about new milk warm, when two ounces of honey or treacle may be added, and the whole given as a drink. It muſt be repeated at the diſtance of every day or two, for two or three times, or as there may be occaſion.

Where the beaſt is ſtrong, a little blood may ſometimes be taken away with advantage; but it ſhould not be turned out into the paſture the ſame day.

When the diſeaſe does not give way to theſe remedies, it may be neceſſary to have recourſe to a ſtrong purge or two. After which a drink compoſed as below may be given: Salt of tartar, one ounce; Caſtile ſoap ſliced, two ounces; well rubbed down with an ounce of balſam of copaiva, and then two ounces each of valerian-root, ginger-root, and Peruvian bark in powder added, and the whole given in ale or gruel as above, repeating it every other day.

It is neceſſary to keep the bodies of the animals well open through the whole of the diſeaſe; in which intention a drink compoſed as below may often be uſeful: Barbadoes aloes, in powder, one ounce; caſtor-oil, four ounces; ſyrup of buckthorn, two ounces; mixed and given in a quart of oatmeal-gruel when about new milk warm, and repeated until the proper effect be produced, uſing the firſt ſaponaceous drink at the ſame time.

When this complaint is removed, the general health of the animals may ſoon be reſtored by the proper uſe of cordial ſtrengthening drinks, formed of the different aromatic pectoral ſeeds in the powdered ſtate.

The yellows is not a very common diſeaſe among ſheep, and conſequently has not been very accurately deſcribed; but probably confounded with many other affections to which they are ſubject. It is ſuppoſed by ſome to be in general confined to the South-Down and new Leiceſter breeds, which, from their more tender conſtitutions, are more liable to complaints.

The appearances of the diſeaſe are a yellowneſs over the whole body, but particularly diſtinguiſhable in the white of the eye. The wool, too, has a little of the tinge, and is ſlightly hard. The paſſages of the belly are of a whitiſh colour, and the urine is found to tinge any thing immerſed in it of a yellow hue. Sometimes there is a degree of fullneſs and hardneſs in the right-ſide, about the ſeat of the liver. The cauſes are any thing which has a tendency to obſtruct the gall-ducts, but they are by no means evident; their effect, however, ſeems generally to harden the liver, and invariably to impede the paſſage of the bile from it into the bowels. In ſome caſes, ſmall ſtones, formed in the gall-bladder, produce it; and at other times, it is cauſed, as in the rot, by the ſwelling of the glands impeding the flow of the bile in the ducts, in which caſe it is moſtly incurable.

The removal of the diſeaſe is to be attempted by the uſe of ſtrong purgatives, and ſuch remedies as act ſtrongly on the ſtomach. A ſtrong ſolution of purging ſalts will partly tend to produce this effect; and ten grains of ipecacuanha, given every three hours in a little warmed ſtrong beer, is ſaid to be attended with the moſt beneficial effects, when continued for five or ſix days together, and a doſe of purging ſalts given after it, ſo as to clear the bowels. Calomel and ſoap may likewiſe be often given with great benefit, as well as ſome of the above ſaponaceous remedies.

YEMANA, or Jemama, in *Geography*, a country and city of Arabia, which M. D'Anville, probably miſled by ſome map and uncertain accounts, places on a river called Aftan, and which he repreſents as a ſtream in Neged, though Niebuhr mentions it merely as a wali or brook, which runs after rains. D'Anville ſays, that Jemama is in Al Kardjé, which is the grand province of Kerjé of Niebuhr, on the E. of Hedjaz and Yemen; and in this province, according to the Daniſh geographer, is the city of Amamé or Imamé, renowned for the prophet Moſeilama, whom the hiſtorian Gibbon aſcribes to Yemana, and which town is in the diſtrict of Surſa. But this cannot correſpond with D'Anville's Jemama, which is in the province of Ared, bounded only by that of Lahſa on the E. Niebuhr alſo informs us, that Aijana, a town of Ared, is remarkable for the new prophet Wahhab; and therefore Gibbon ſeems to have erred by ſuppoſing it to be the ſame with Yemama, the latter being probably a town of Kerjé, not far to the E. of Hedjaz. After all, the province and city of Jemama are

are probably mere fictions, which ſhould be excluded from the maps, together with the river of Aſtan, which, if it exiſted, would certainly be followed by the caravans from Lahſa to Mecca, while they ſeem to prefer a ſandy deſert. Pinkerton's Geography.

YEMBA. See Emba.

YEMELLA, a town of Hindooſtan, in Golconda; 24 miles E.N.E. of Rachore.

YEMEN, a province of Arabia, comprehending the fineſt and moſt fertile part of Arabia, repreſenting, as Gibbon has obſerved, the Arabia Felix of antiquity, ſurrounded by the Red ſea, or Arabic gulf, and by the province of Hadramaut, Nedsjed, and Hedsjas. Yemen is naturally divided into two parts, differing greatly in ſoil and climate: that bordering on the Red ſea is a dry and ſandy plain, nearly two days' journey in breadth, and is ſcorched by the moſt torrid heats; the other, extending immediately beyond this, is a high-lying country, full of precipitous yet fertile hills, and enjoying a much more temperate air. Yemen is, like the reſt of Arabia, parcelled out among a number of different ſovereigns in unequal portions. Some of them are princes of conſiderable power; but many are petty ſchiecks, who are, however, perfectly independent: the moſt conſiderable of theſe princes is the imam, who reſides at Sana. There are ſeveral other independent ſtates, as Aden, Kaukeban, Kobail or Haſchid-u-Bekil, Abu-Ariſch, a large diſtrict between Abu-Ariſch and Hedsjas, inhabited by free Bedouins; Khaulan, Sahan, comprehending the principality of Saade; Nedsjeran, Kachtan, Nehhm, Eaſt Khauſan, Dsjof or Mareb, Jafa, and ſeveral others. The ſame intermixture of fertile and barren territory, and the ſame productions, appear every where through the whole province: the imam, however, ſeems to be maſter of the richeſt, the moſt agreeable, and the moſt intereſting part of this tract of country. It would not be eaſy to explain diſtinctly the extents and limits of this ſovereign's territories, as they are ſo interſected by the domains of a number of petty princes. The general diviſion of Yemen into Tehama the Lowlands, and Djebal the Highlands, obtains in the imam's dominion as well as elſewhere. Upon this grand diviſion depends the ſubdiviſion of the kingdom of Sana into thirty governments or counties. Tehama contains ſix of theſe governments, and the Highland country twenty-four: the ſmall governments are not all alike populous or remarkable. There are in the territory of the imam many ſchiecks diſperſed among the mountains, who acknowledge not his authority, and are but in a very ſlight degree dependent upon him. From the expulſion of the Turks in the year 1630, the reign of the imams began; their great anceſtor Khaſſem Abu Mahomed was the chief author of that revolution. The throne of Yemen is hereditary; if generally approved of by the ſubjects, the eldeſt legitimate ſon of an imam is his rightful ſucceſſor. But in the deſpotic governments of the Eaſt, indeed, no order can be cloſely obſerved, becauſe there are no fundamental laws. The imam is an abſolute prince, and the more ſo by uniting in his own perſon ſupreme authority, both ſpiritual and temporal, over his ſubjects. His juriſdiction in eccleſiaſtical matters, however, extends not over the dominions of other ſovereigns of the ſame ſect: theſe ſtates have each a mufti, or cadi, for its ſpiritual uſe. Although the imam be abſolute, he is checked in the exerciſe of his authority by the ſupreme tribunal of Sana, of which he is only preſident: this tribunal, conſiſting of a certain number of cadis, poſſeſſes the ſole power of life and death. The imam may not order any of his ſubjects for execution, but ſuch as have been condemned in conſequence of a criminal proſecution before this court. The cadis are generally eſteemed to be perſons of incorruptible integrity, of blameleſs lives, and devoted to the faithful diſcharge of their duties: they are not changed here ſo often as in Turkey, but hold their offices uſually for life. Every petty diſtrict in the dominions of the imam has its governor: if not a prince, or one of the higher nobility, this governor is called wali and dola, or ſometimes emir, when he happens to be a perſon of low birth. In every little town, a ſub-dola, with a ſmall garriſon, conſiſting ſometimes of five or ſix ſoldiers, reſides to maintain order. The chief of a large village is a ſchieck; he of a ſmall one a hakin. Every city in which a dola reſides has alſo a cadi, dependent on the chief cadi of Sana; the cadi is ſole judge in civil and eccleſiaſtical affairs, nor may the dola interfere to contradict his ſentences, or render them inefficacious. The cadis in the provinces, no leſs than in the capital, are in high reputation for wiſdom and integrity. The revenue of the imam is fluctuating and precarious; Niebuhr ſtates it at about 500,000 crowns a month. This revenue ariſes from a land and poll tax, and from duties payable upon articles of merchandize. The military force conſiſts ordinarily of 4000 infantry and 1000 cavalry. Theſe armies uſe no artillery, nor do the Arabs know how to manage cannon. As the imam has no dread of enemies or corſairs upon the Arabic gulf, he has no occaſion for a naval force; and his ſubjects are therefore generally unſkilled in navigation. The fiſhermen venture far to ſea in ſmall canoes ſcarcely furniſhed with oars. The manufactures of a people of ſo little induſtry cannot but be very trifling: no ſabres are manufactured in Yemen, nor any edged weapon, except a kind of crooked knives, called *jembea*. The making of match fire-locks has been attempted here within theſe few years: it ſucceeds but indifferently. It is only of late that glaſs works have been eſtabliſhed at Mocha; ſome coarſe cloth is manufactured here, but not ſo much as is required for the uſe of the country: broad cloths are neither made nor worn here. The Engliſh brought ſome goods of this ſort to Mocha, but were obliged to carry them back to India unſold. A country which affords ſo few articles for ſale cannot have a great trade. Coffee is almoſt the ſole article exported from Yemen; a valuable commodity, in exchange for which many of thoſe things which this country needs from abroad may well be obtained. All the commerce of Yemen is carried on by Mocha, except only that ſome ſmall quantities of coffee are exported by Loheia and Hodeida. Agriculture ſeems to be farther advanced in Yemen than in the other parts of the Eaſt. Wheat, in the beſt cultivated diſtricts, is ſaid to yield an increaſe of fifty-fold; durra, in the Highlands, 140; and in the Tehama from 200 to 400: and the inhabitants of Tehama reap three ſucceſſive crops from the ſame field in the ſame year. In many parts of Yemen, whole fields are cultivated like a garden, and watered in the rainy ſeaſon by canals from the hills. The inhabitants of the plain are obliged to encompaſs their fields with dykes, that the water may remain for ſome time upon the ſurface of the ground. In the upper parts of Yemen, the inhabitants collect the water neceſſary for their fields in dams formed at the foot of the hills. In ſome diſtricts of Yemen, maize and durra are planted with the hand. The huſbandry of Tull and Du Hamel, ſays Niebuhr, although novel in Europe, is very old in Arabia. In order to guard their fields from depredation of birds and other deſtructive animals, the peaſants watch them by turns. In the Highlands, he who watches ſeats himſelf on a tree; in the Tehama, on a ſort of ſcaffold, with a roof raiſed over it. Niebuhr's Travels.

YEN, a river of China, which runs into the Hoang, 17 miles S.E. of Yen-tchang.

YEN-CHIN-TCHING, a town of China, in Chantong; 45 miles E.S.E. of Tci-nan.

YENDON, a river of England, in the county of Stafford, which runs into the Churnet.

YENGHI Iman, a town of Curdiftan; 70 miles S.E. of Kerkuk.

YENGI, a town of Corea; 25 miles N.E. of Kang.

YENISSEI, or Yenissey, or *Eniffei*, a river of Ruffia, which the Tartars and Mongoles, who inhabit the fuperior regions of it, above the Tungufka, call Kem, and the Oftiaks, Gub or Khefes, fignifying the Great river, and which is at firft compofed of two rivers, the Kamfara and the Veikem, originating in the Chinefe Soongaria, or Bucharia, and forming a conjunction in N. lat. 51° 30′, and E. long. 111°. About the mouth of the Bom-Kemtfhyug it enters on Ruffian ground, and hence firft takes the name of Yeniffey. After various windings it turns northward, and in N. lat. 70′, and E. long. 103° 30′, forms a bay containing feveral iflands; and at laft, in 3° 30′ of length, falls into the Frozen ocean. In autumn, when its water is at the loweft, its breadth, *e. gr.* at the town of Yeniffeifk, is about 570 fathom, whereas in the fpring it is 795 fathom and upwards. The coafts of the Frozen ocean, between the mouths of the Yeniffey and Oby, are called the Yuratzkoi fhore. The more confiderable ftreams taken up by the Yeniffey are the following: on the right, the Ufs, the Tuban, the Kan, and the three Tungufkis, *i. e.* the Upper, the Middle, or Podkammenaia, and the Lower Tungufka; on the left, the Abakan, the Yelovi, and the Turukhan. In its fuperior regions, the Yeniffey flows over a very ftony bed; and its fhores, particularly the eaftern, are moftly befet with lofty mountains and rocks. Its courfe is in general very rapid, though near its mouth it flows fo gently, that the current is hardly perceptible. In the neighbourhood of Turukanfk and elfewhere it forms fome confiderable iflands; and between the cities of Yeniffeifk and Krafnoyarfk feveral cataracts are to be feen. The Yeniffey is navigable from its mouth as far as Abakan, and affords abundance of the beft fifh. Near this river, as well as in fome other fteppes of Ruffia, are ftone-tombs, which reprefent in rude fculpture human faces, camels, horfemen with lances, and other objects. Between this river and the Oby, or Ob, is a vaft fpace extending from the north of Tomfk to the Arctic ocean, which is regarded as a fteppe, being a prodigious level with no appearance of a mountain, and fcarcely of a hill. The fame term is applied to the wider fpace between the Yeniffey and the Lena, between the Arctic ocean in the N., and the river Tungufka, or Angara, in lat. 65°; and to the parts beyond the Lena as far as the river Kolyma or Covima. Tooke's Ruff. vol. i.

YENISSEISK, or Enisseisk, a fmall town of Ruffia, in the government of Tobolfk, fituated on the above defcribed river, the forges of which yield a confiderable tax to the Ruffian revenue. Its jurifdiction is extenfive, and it pays annually a tribute in fkins to the crown of Ruffia; 400 miles E.N.E. of Kolivan. N. lat. 58° 16′. E. long. 91° 50′.

YENITE, in *Mineralogy*, *Lievrite*, Werner, a mineral found in the ifland of Corfica, which from the great quantity of iron that it contains might properly be claffed with the ores of iron. It is arranged by profeffor Jamefon with the chryfolite family, but it differs greatly in the proportions of its conftituent parts from all the other fpecies which he has claffed with this family. The appearance of this mineral refembles hornblende, or rather black epidote: it occurs both cryftallized and maffive. The form of the cryftals is that of a rhomboidal prifm, the alternate angles of which meafure about 113 and 67 degrees: the prifms are terminated by low four-fided pyramids, the faces of which are fet on the lateral planes of the prifm. It is alfo cryftallized in rectangular prifms, bevelled on the extremities, and the bevelling planes fet on the obtufe edges. Thefe figures are alfo varioufly modified by the edges or angles being bevelled. The cryftals are fometimes very minute or acicular, and fometimes half an inch in thicknefs; they are frequently aggregated in diverging radii, and fometimes imbedded. The prifms are ftriated longitudinally. The ftructure is imperfectly lamellar, with joints parallel to the fides, and to the fhort diagonal of the rhomboidal prifm. The fracture of yenite is uneven, and imperfectly conchoidal, with a luftre between vitreous and refinous. The colour is black paffing into brown; it does not change its colour in the ftreak. The hardnefs of yenite is about equal to that of common felfpar; it is eafily frangible. The fpecific gravity of yenite varies from 3.825 to 4.061.

It is fufible with eafe by the blow-pipe into a black glafs, which has a metallic afpect, and is attracted by the magnet, but does not poffefs polarity; it diffolves with borax with a flight ebullition. It is acted upon by the mineral acids, but does not gelatinize with them. When expofed to heat it becomes magnetic. Its colour is changed by heat from black into dark reddifh-brown, and it lofes about two *per cent.* of its weight.

The conftituent parts of yenite are,

Silex	from	28 to 30
Alumine		1
Lime		12 - 14
Oxyd of iron with manganefe		51 - 58

Yenite decompofes gradually on expofure to the air, and is reduced to a yellowifh-brown ochre. According to Brongniart, yenite occurs in difperfed cryftals and groups, and in compact kidney-fhaped maffes, in a thick bed of a greenifh fubftance nearly refembling yenite, but which has not been accurately examined. It is accompanied with epidote, quartz, and arfenical pyrites. This bed at Rio la Marino, in Corfica, covers a rock of primitive marble mixed with talc. At the Cap de Calamite, it is accompanied with magnetic iron-ftone, garnets, and quartz.

YEN-KING, in *Geography*, a city of China, of the fecond rank, in Pe-tche-li; 52 miles N.N.W. of Peking. N. lat. 40° 30′. E. long. 125° 30′.

YENLADE, or Stray, a channel between the Thames and Medway, which feparates the ifland of Graine from the coaft of Kent. It was formerly the ufual paffage for veffels to and from London.

YENNE, a town of France, in the department of Mont Blanc, near the Rhône, fuppofed to be the ancient Epanna, where Sigifmund, king of Burgundy, affembled a council at the end of the fifth century; 14 miles N.W. of Chambery.

YEN-NGAN, a city of China, of the firft rank, in Chen-fi, on the river Yen; 390 miles S.W. of Peking. N. lat. 36° 44′. E. long. 108° 49′.

YEN-PING, a city of China, of the firft rank, in Fo-kien; 820 miles S. of Peking. N. lat. 26° 40′. E. long. 117° 54′.

YEN-TCHEOU, a city of China, of the firft rank, in Tche-kiang. Near this town are mines of copper, and trees that yield varnifh, which give a value to the cabinet-work fo much efteemed in Europe; when this varnifh is once dry, it never melts again, and will bear boiling water. The

The paper manufacture of this place is in equal esteem, and for which they have a great demand. Six towns of the third order are under its jurisdiction; 650 miles S.S.E. of Peking. N. lat. 29° 38′. E. long. 119° 14′.—Also, a city of China, of the first rank, in Chan-tong. The territory depending upon this capital is inclosed between two considerable rivers, which abound with fish, and make the soil very fruitful. The country is very well cultivated, the mountains are covered with woods, and the air is mild and temperate. There are twenty-seven towns within the jurisdiction of this capital; four of the second order, and twenty-three of the third; 267 miles S. of Peking. N. lat. 35° 44′. E. long. 116° 36′.

YENTCHERU, a town of Hindoostan, in the circar of Cuddapa; 20 miles N.N.E. of Combam.

YEN-TCHING, a town of China, in Chan-tong, where a peculiar species of glass is manufactured, of so delicate a nature, that it will not endure the inclemency of the air; 45 miles S.E. of Tci-nan.

YEO. See Yeovil.

YEOMAN, the first or highest degree among the plebeians of England; next in order to the gentry.

The yeomen are properly the freeholders, who have land of their own; so called from the Saxon *gemane*, or *geman*, *common*.

The word *yongman* is used for yeoman in the statute 33 Hen. VIII., and in old deeds it is sometimes also written *jeman*, which, in the German, signifies *any-body*.

According to sir Thomas Smith, a yeoman is a free-born Englishman, who can lay out of his own free land in yearly revenue to the sum of forty shillings sterling.

The yeomanry of England are capable of holding lands of their own to a good value; are adjudged capable of certain offices, as constables, churchwardens, jurymen; and are also to vote in elections to parliament, and to serve in the army, and to do any other act where the law requires one that is *probus et legalis homo*.

The yeomen were famous, in ancient times, for military valour, being particularly expert at the management of the bow; whence the infantry was composed chiefly of them.

They frequently constituted the body-guard of our kings; and in process of time gave rise to the institution of *yeomen of the guard*.

In many cases, the law conceives a better opinion of the yeomanry that occupy lands, than of tradesmen, artificers, &c.

By a statute, 2 Hen. IV., it is enacted, that no yeoman shall take or wear a livery of any lord, upon pain of imprisonment, and a fine at the king's pleasure.

Yeoman is also a title of office in the king's household, of a middle place or rank between a gentleman and a groom. Such are the yeoman of the buttery; yeoman of the scullery; yeoman of the wine-cellar, ewry, wood-yard, &c. There are also the yeoman of the mouth, yeoman of the kitchen, yeomen-porters, &c.

Yeoman, in *Sea Language*, an officer under the boatswain or gunner of a ship of war, usually charged with the stowage, account, and distribution of their respective stores.

Yeomen-*Warders*. See Warders *of the Tower*.

Yeomen *of the Guard*, properly called *yeomen of the guard of the king's body*, were anciently a body of men of the best rank under gentry, and of larger stature than ordinary; every one being required to be six feet high.

Their number has varied in almost every reign, and formerly consisted of a certain number in ordinary, and an indefinite number extraordinary; and in case of a vacancy in the former, it was supplied out of the latter number. In the reign of king Edward VI. this corps was very numerous. In the reign of queen Elizabeth, the yeomen attending her in her different progresses were occasionally mounted. In the reign of queen Anne, the arms of half this band were arquebuses, which are said by Chamberlain to have been disused ever since the reign of king William; the other half had partisans, and those of both classes had swords. They had their wages and diet allowed them; so that in a MS. of the expences of the royal establishment for the year 1727, the charges of the table of the yeomen of the guard were 273*l.* 15*s.* But their diet has been discontinued since that reign. Their duty was to wait upon the queen in her standing-houses; forty by day, and twenty by night. At St. James's, they waited in the first room above stairs, called the guard-chamber. It is also their duty to attend the sovereign abroad by land or water.

At present there are but one hundred yeomen in constant duty, at 39*l.* 11*s.* 3*d.* *per annum* each; eight of whom are called ushers, who have 10*l.* *per annum* each more than the other yeomen; six are called yeomen hangers, and two, yeomen bed-goers, who have the same pay as the ushers; and seventy more not on duty; and as one of the hundred dies, his place is supplied out of the seventy.

The officers are, a captain, who has 1000*l.* *per annum;* a lieutenant, at 500*l.* *per annum;* an ensign, at 300*l.*; and four exons, at 150*l.* *per annum* each; and a clerk of the checque at the same salary.

Their origin is traced to the year 1485, when king Henry VII. ascending the throne, immediately after his coronation, instituted a guard of fifty archers to attend him and his successors. They were probably then, as they are now, called the *yeomen of the guard*.

It is observed, that this is the first instance of any established or permanent military guard in England: its kings, till that time, except in times of war and insurrection, contenting themselves with the guard of their proper domestics and retinue. And. Hist. Com. vol. i. p. 302.

Most of the writers, however, against standing armies commence that establishment with the serjeants at arms, who were first instituted by king Richard I. Their dress is that which was worn in the reign of king Henry VIII., and which on many occasions was put on by that king: it consists of a scarlet coat reaching down to the knees, guarded with garter blue velvet, and with badges of the rose and crown on their breasts and backs; their breeches also are scarlet, guarded with blue velvet; their caps are of black velvet, with broad round crowns, adorned with ribbands of the royal colours, *viz.* red, white, and blue.

The officers and yeomen are at the disposal of the captain; but the captain is at the appointment of the king.

Yeoman *of the Salt Stores*. See Acatery.

YEOMANRY Cavalry, a denomination given to those troops of horse which were levied in the late war among the gentlemen and yeomen of the country, upon the same principle with the volunteer companies. The yeomanry cavalry were to be allowed pay when called out on actual service, and each corps was liable to be put upon duty within its district: all contingent expences, properly and unavoidably incurred, were to be reimbursed after an investigation at the war-office. One serjeant and a trumpeter *per* troop were to have constant pay, with the same allowances as serjeants and trumpeters of regular cavalry. Some accoutrements were to be furnished by the ordnance, or an equivalent

equivalent in money to be given in lieu of them, and 14*s.* 2*d.* *per* man for holfters.

YEOVIL, in *Geography*, a large and populous market-town in the hundred of Stone, county of Somerfet, England, is fituated on the confines of the county, at the diftance of 9 miles S.S.E. from Somerton, and 122 miles W.S.W. from London. It derives its name from the river Yeo, which rifes near Sherborne, and paffes this place under a ftone bridge of three arches, feparating the counties of Somerfet and Dorfet. The town of Yeovil confifts of upwards of twenty ftreets and lanes; many of the former are of confiderable width: the houfes in general are refpectable, and many of them are built of ftone. Part of the town is called the Borough, and is governed by a portreve and eleven burgeffes, out of whom the portreve is annually chofen. Here is a fpacious market-houfe, feventy feet in length, and twenty in breadth, fupported by ftone pillars, in the centre of which are the remains of an ancient crofs. A confiderable market is held on Fridays for corn, cattle, pigs, butter, cheefe, and flax: here are alfo two annual fairs. The woollen trade was formerly extenfive here, but has decreafed: the chief bufinefs of the town is the manufacture of leather gloves. In the return of the year 1811, the population of this parifh was eftimated at 4118; the number of houfes at 459. The church, a large ancient ftructure, confifts of a nave, chancel, two aifles, and tranfept: the length of the whole is 146 feet; the breadth 50. At the weft end is a plain tower, ninety feet high, with a ftone baluftrade at the top. Diffenters have feveral meeting-houfes in the town. Here is an alms-houfe, founded in the year 1476, by the Rev. Mr. Woburne, minor canon of St. Paul's, London, and by him endowed with confiderable landed property for the maintenance of a mafter, two wardens, and twelve poor perfons of either fex. He alfo built a chapel for the ufe of his poor, and ordained divine fervice to be performed in it every day.—Collinfon's Hiftory of Somerfetfhire, vol. iii. Beauties of England and Wales, vol. xiii. Somerfetfhire.

YEOUNGBENZAH, a town of Birmah, on the Irawaddy; 36 miles N.N.W. of Rangoon. N. lat. 17° 30′.

YEOU-TUN-OUEI, a town of Chinefe Tartary. N. lat. 41° 8′. E. long. 121° 9′.

YEOU-YU, one of the fmall iflands in the Chinefe Archipelago; 62 miles S.W. of Macao.

YEOWAH, a town of Birmah; 15 miles S. of Pegongmew.

YEPES, a town of Spain, in New Caftile; 17 miles E. of Toledo.

YERAPATTA, a town of Hindooftan, in Myfore; 8 miles S. of Dalmacherry.

YERCO, a town of Thibet; 90 miles S.E. of Laffa.

YERE, a river of France, in the department of the Lower Seine, which runs into the Englifh Channel, at Eu.

YERGHIEN. See YARKAN.

YERK, in *Horfes*, a term fignifying to ftrike out backwards. A horfe is faid to yerk, or ftrike with the hind legs, when he flings and kicks with his whole hind quarters, ftriking out the two hinder legs near together, and even to their full extent. Horfes of this fort are very dangerous, and fhould be parted with as foon as poffible, whether they are of the farm or the faddle kind.

YERKIE, in *Geography*, a town of Ruffia, on an ifland at the mouth of the Volga, where veffels take their departure for the Cafpian fea. Here fhips formerly entered and cleared, but the ifland is now almoft overflowed, and the trade of the place much decayed fince 1747; 60 miles S. of Aftrachan.

YERMA. See JERMAH.

YERMUK. See YARMUC.

YERTNAGOODAM, a town of Hindooftan, in the circar of Rajamundry; 17 miles S.W. of Rajamundry.

YERVA-MORA, in *Botany*. See BOSEA.

YERVILLE, in *Geography*, a town of France, in the department of the Lower Seine; 12 miles N.N.E. of Caudebec.

YESCOKING CREEK, a river of North Carolina, which runs into Pamlico found, N. lat. 35° 29′. W. long. 76° 14′.

YESD. See YEZD.

YESD, a town of Perfia, in the province of Lariftan; 40 miles N. of Lar.

YESDECAST. See JEZDKAST.

YESID, a town of Perfia, in the province of Chufiftan, or Kuziftan; 18 miles N. of Toftar.

YEST. See YEAST.

YETCHERADAW, in *Geography*, a town of Hindooftan, in Myfore; 9 miles E. of Rydroog.

YETEOPAUK, a town of Hindooftan, in the circar of Cicacole; 15 miles S.W. of Coffimcotta.

YETHAN, a river of Scotland, which runs into the German fea, 10 miles N. of Aberdeen.

YETHOLM, or ZET-HAM, a market-town in the diftrict of Kelfo, and fhire of Roxburgh, Scotland, is fituated nine miles S.E. from Kelfo, on the fmall river Bowmont, which divides it into two parts, refpectively named Town Yetholm and Kirk Yetholm. A weekly market is held on Wednefdays; and two fairs annually. Many tinkers and gypfies refide in this town. The parifh extends about four miles in length, and two in breadth; and is bounded on the eaft and fouth by the Englifh border. The furface is hilly, but the hills are covered with verdure, and paftured by a very confiderable number of fheep. In the population return of the year 1811, this parifh is ftated to contain 213 houfes, and 1138 inhabitants. King Robert III. granted the barony of Yetholm in the fourteenth century to Archibald Mac Dougal, whofe defcendant ftill enjoys it.—Carlifle's Topographical Dictionary of Scotland, 1813.

YETTUS, in *Natural Hiftory*, a name given by the writers of the middle ages to a fpecies of marble of a deep red, which was ufed by fome as a touch-ftone.

YEU, in *Geography*, a fmall and infignificant ifle, fituated on the W. coaft of France.

YEVA CHARRUM, in *Natural Hiftory*, a name given by the people of the Eaft Indies to a kind of litharge, which is very common in that part of the world, and is faid to be made partly from lead and partly from zinc.

It is lefs heavy than our yellow litharge, and of a paler colour. It is ufed as a cauftic in all the occafions of furgery there.

YEVERING, in *Geography*, a village of England, in the county of Northumberland, where the Scots were defeated in 1415, by fir Robert Humphrevil and the earl of Weftmoreland. Near it is a mountain called Yevering Bell, belonging to thofe called Cheviot; 6 miles W.N.W. of Wooller.

YEULA, a town of Hindooftan, in Baglana; 5 miles E. of Bahbelgong.

YEVRE LE CHATEAU, a town of France, in the department of the Loiret; 6 miles S.E. of Pithiviers.

YEW, or EUGH, in *Botany*. (See TAXUS.) De Theis traces thefe Englifh words, whofe antiquity cannot be doubted,

doubted, to the Celtic *If* or *Iw*, green, alluding to the evergreen foliage of this tree. The French have retained *If* unaltered to the prefent day.

Yew, as fome fay, may be derived from the Greek ἰπτω, *to hurt;* and probably becaufe before the invention of guns our anceftors made their bows of this wood: they therefore took care to plant the trees in the church-yards, where they might be often feen and preferved by the people.

Yew is alfo a term ufed by the falt-workers of Lymington, and fome other parts of England, to exprefs the firft rifing of a fcum upon the brine in boiling.

In the places where they ufe this term, they add no clarifying mixtures to the brine, for it ferments in the ciſterns, and all its foulnefs finks to the bottom in form of a thin mud; they admit only the clear liquor into the pan, and boil this brifkly till it yews, that is, till a thin fkin of falt appears upon its furface; they then damp the fire, and carefully fkim off this film, and clear only the fcratch or calcareous earth, which feparates to the bottom.

They do not collect this into fcratch-pans, as at many of the other works, but they rake it up to one fide of the pan, and take it out; they there add a piece of butter, and continue the fire moderately ftrong till the falt is granulated. They keep a brifker fire on this occafion at Lymington than in moft of the other works; fo that they will work three pans in twenty-four hours. See Salt.

Yew-*Tree*, in *Agriculture* and *Rural Economy*, a well-known evergreen tree, the timber of which is much efteemed for different ufes and purpofes in hufbandry, and where toughnefs, elafticity, and durability, are required.

Trees of this fort may be eafily propagated, in moft cafes, by fowing their berries when divefted of the pulp in autumn, as foon as they are ripe, upon a bed of frefh undunged foil, either over the whole or in drills, covering them over about half an inch thick with the fame earth: but the latter is the better mode. In the fpring, the bed muft be carefully cleared from weeds, and if the feafon prove dry, it will be proper to refrefh it with water now and then, which will promote the growth of the feeds; many of which will come up the fame fpring, but others will remain in the ground until autumn or fpring following; but when the feeds are preferved above ground till fpring before they are fown, the plants never come up till the year after, fo that by fowing the feeds as foon as they are ripe there is often a whole year faved.

The plants, when they come up, fhould be kept conftantly well cleared from weeds, which, if permitted to grow amongft them, would caufe their bottoms to be naked, and frequently deftroy the plants when they continue long undifturbed.

In this bed, the plants may remain two years; after which, in autumn, there fhould be a fpot of frefh undunged foil prepared, into which they fhould be removed about the beginning of October, planting them in beds about four or five feet wide, in rows about a foot afunder, and fix inches diftant from each other in the rows, obferving to lay a little litter or mulch upon the furface of the ground about their roots, as alfo to water them in dry weather until they have taken root; after which they will require no farther care, but to keep them clear from weeds in fummer, and to train them according to the purpofe for which they are defigned, —for timber in a ftraight manner.

In thefe beds they may remain two or three years, according as they have grown, when they fhould again be removed into a nurfery, placing them in rows at three feet diftance, and the plants eighteen inches afunder in the rows, obferving to do it in the autumn, as before directed, and continue to trim them in the fummer for what they are intended; after they have continued three or four years in this nurfery, they may be tranfplanted where they are to remain, always obferving to remove them in autumn where the ground is very dry; but on cold moift land it is better in the fpring.

Thefe trees are very flow in growing, but there are many very large trees upon fome barren cold foils.

It is obferved in the Gloucefterfhire Report on Agriculture, that the yew-tree fhould not be fuffered to grow in or near cow-paftures. The leaves are poifonous to horned cattle and horfes, though the berries are efteemed inoffenfive. In January 1805, in confequence of fome fences being broken down by a violent wind during the night, a number of cows belonging to a farmer in Sandhurft entered an inclofed fhrubbery, where there were many yew-trees growing, and continued in it till the morning. Soon after they were driven out, all of them were feized more or lefs with a kind of madnefs, or fuch acute pains as made them run about in a very furious manner, fometimes leaping to a confiderable height, then beating their heads againft whatever oppofed them, and at laft falling inftantly dead. Oils of different forts were poured down their throats, as there was an opportunity of fecuring them, which feemed to produce a good effect on fome; but notwithftanding every effort, nine out of thirty died in a few hours after they were difcovered. On their being opened, it appeared that the whole quantity they had eaten, put together, would not have filled a peck.

An opinion prevails, that the leaves are not poifonous in the fummer: this, however, is probably erroneous, at leaft it is not confirmed fufficiently by fact to juftify the farmer in fubjecting his cattle to the experiment. If cattle come within reach of the yew-tree at that time of the year, they may perhaps reject it altogether, giving the preference to other green food, more palatable, and in plenty around them.

Thefe trees fhould therefore in all cafes be carefully kept out of the hedge-rows and all other parts of fields, where cattle are fuffered to feed and pafture.

YEYEAPOUR, in *Geography*, a town of Hindooftan, in Lahore; 16 miles S. of Nagorcote.

YEZD, or Yesd, a large and populous city of Perfia, fituated in a fandy defert, contiguous to a high range of mountains running nearly E. and W. This is the grand mart between Hindooftan, Bucharia, and Perfia, and is, therefore, a place of confiderable trade. The bazaar is well fupplied, and the city contains 20,000 houfes; befides thofe of the Guebres, or worfhippers of fire, which are eftimated at 4000. The Guebres were an induftrious people, but are greatly oppreffed, being taxed at twenty piaftres a-head, in addition to the various other exactions of the Perfian government. Many opulent Hindoos formerly refided here; but the late governor, wifhing to enrich himfelf by plundering their property, they all fled in one night towards Candahar, where they have fince eftablifhed themfelves. The prefent khan has, in vain, endeavoured to recall them, and there are now only nine Hindoos in Yezd. The city imports the greateft part of its corn from the neighbourhood of Ifpahan. Cattle are alfo fcarce, and an afs will fometimes fell as high as fifty tomauns. The manufacture of filk ftuffs is fuperior to any in Perfia; and the numuds or thick felts of Tuft, a fmall village, diftant eight miles, are equally famous. The fort of Yezd has but a mean appearance; and the town is deftitute of a wall. That

That territory which lies between Yezd and Ifpahan is the moft arid part of Irak. The foil is poor, light, and fandy; and here is a general fcarcity of wood and water: the climate alfo is hot, though not unhealthy. The fmall towns of Ardiftan, Nain, Aujdah, Mynboot, and Sezdabad, are badly built, and contain from 100 to 200 houfes each. M'Kinneir's Perfia.

YEZDEGERDIC YEAR, in *Chronology*. See PERSIAN *Year*.

YEZDICAN, in *Geography*, a river of the Perfian empire, in the province of Azerbijan, which has its fource about 60 miles to the E. of the lake of Van, and which, purfuing a N.E. courfe, paffes under the walls of Yezdican and Kurs, and meets the Araxes a little to the N. of Nuchfhivan.

YEZEDI, the name of a Perfian fect, of which feveral tribes inhabit the mountains of Sinjar, about eight or ten miles from Nifibis. They are numerous in the vicinity of Mofu1, and are faid to worfhip, or rather deprecate, the devil, entertaining an idea that he poffeffes an unlimited power over mankind. They even diflike to hear the name of the evil fpirit mentioned in their prefence. They are the defcendants of thofe Arabs who followed the banners of Yezid, and fought againft Houffein, in the battle of Kerbela; and fcheik Ade, the founder of the fect, is interred near Mofu1. They adore one Supreme Being as the creator and benefactor of the human race, drink wine and other ftrong liquors, and circumcife like the Mahometans. The Yezedi are hated by the Turks, to whom they are mortal enemies, and who have never been able to fubdue them. They lie in ambufh behind the rifing grounds which fkirt the road between Mofu1 and Merdin; and as travellers are obliged to pafs a lonely wild, twenty furlongs in length, they are liable, if not numeroufly attended, to be murdered by thefe mifcreants. Sinjar affords abundance of pafturage, and alfo yields a fufficient quantity of grain for the confumption of its favage inhabitants. M'Kinneir's Perfia.

YFFINIAC, a town of France, in the department of the North Coafts; 6 miles S.E. of St. Brieuc.

YGEA, a town of Spain, in Old Caftile; 12 miles S. of Calahorra.

YGGEDE, or UGGADE, in *Ancient Geography*, a place of Gallia Lyonnenfis. Anton. Itin.

YGIN, in *Geography*, a town of Corea; 28 miles S.S.W. of Haimen.

YGROMETER. See HYGROMETER.

YGUALADA, in *Geography*, a town of Spain, in Catalonia; 28 miles N.W. of Barcelona.

YGUISAN, a fmall ifland among the Philippines, near the north coaft of Panay. N. lat. 11° 35′. E. long. 122° 32′.

Y-HO, a river of China, which rifes in Chan-tong, and runs into the Hoang, near Sou-tcheou, in the province of Kiang-nan.

YIAN-CHAN, a town of Corea; 28 miles E. of Hetfin, or Etfin.

YICHKENISH, one of the fmaller Weftern iflands of Scotland; 1 mile N. of Benbecula.

YIELD or *Slack the Hand*, in the *Manege*. See SLACK.

YIELDING *and Paying*, a law phrafe, formed by corruption from the Saxon *geldan*, or *gildan*, *to pay*. Hence, in Domefday, *gildare* is frequently ufed for *folvere*, *reddere*; the Saxon *g* being eafily converted into a *y*. See GELD, and GILD.

YIETI, in *Geography*, a town of South America, in the province of Paraguay; 120 miles S.E. of Affumption.

YIN, a word ufed by fome of the chemical writers to exprefs verdigrife.

YISSER, in *Geography*, a river of Algiers, anciently called Serbetis, which runs into the fea at Jinnett.

YKINA, a town of Sweden, in the province of Finland; 45 miles N. of Biorneborg.

YLANE, a town of Sweden, in the government of Abo; 27 miles N. of Abo.

YLAY. See ILA.

YLIGAN, a town on the north coaft of Mindanao.

YLIKANNUS, a town of Sweden, in the government of Wafa; 24 miles E.N.E. of Gamla Karleby.

Y-LIN, a city of China, of the fecond rank, in Houquang; 617 miles S.S.W. of Peking. N. lat. 30° 52′. E. long. 110° 44′.

YLISTARO, a town of Sweden, in the government of Wafa; 24 miles E.N.E. of Wafa.

YLIVIESKA, a town of Sweden, in the government of Ulea; 38 miles S. of Ulea.

YLO, or ILO, a fea-port town of Peru, in the diocefe of Arequipa, fituated near the mouth of a frefh-water river of the fame name, which is dry from the beginning of October to January; 25 miles W. of Moquegna. S. lat. 17° 38′.

YLST. See ILST.

YLUM OE, a fmall ifland of Denmark, in the Little Belt. N. lat. 55° 8′. E. long. 10° 7′.

YLWISKA, a town of Sweden, in Eaft Bothnia; 28 miles S. of Braheftad.

YNATILAN, a town on the weft coaft of the ifland of Sibu. N. lat. 10° 21′. E. long. 123° 22′.

YNCA, YNCAN, or INCA, an appellation anciently given to the kings of Peru, and the princes of their blood; the word fignifying literally, *lord*, *king*, *emperor*, and *royal blood*.

The king himfelf was particularly called *capac ynca*, *i. e.* great lord; his wife, *pallas*; and the princes fimply *yncas*. Thefe yncas, before the arrival of the Spaniards, were exceeding powerful. Their people revered them to excefs, as believing them to be fons of the fun, and never to have committed any fault. If any perfon offended the royal majefty in the fmalleft matter, the city he belonged to was totally demolifhed.

When they travelled, whatever chamber they lay in on the road was walled up as foon as they departed, that nobody might ever enter in after them. The like was done to the room in which the king died; in which, likewife, all the gold, filver, and precious furniture, were always immured, and a new apartment was built for his fucceffor.

His beloved wives, domeftics, &c. likewife facrificed themfelves, and were buried alive in the fame tomb along with him. See the Hiftory of the Yncas, by Garcilaffo de la Vefia. See alfo INCA.

YNG, or YN, in *Geography*, a city of China, of the fecond rank, in Chan-fi. N. lat. 39° 40′. E. long. 112° 49′.

YNIESTA, a town of Spain, in New Caftile; 20 miles S.E. of Alarcon.

Y-NING, a town of Corea; 33 miles E.N.E. of Tfintcheou.

YN-PING, a town of Corea; 38 miles S.W. of Koangtcheou.

YN-TCHENG, a town of Corea; 25 miles E. of Outchuen.

YN-YUEI, a city of China, of the fecond rank, in Yun-nan; 1300 miles S.W. of Peking. N. lat. 25° 58′. E. long. 98° 24′.

YOAK, in *Agriculture*. See YOKE, and YOKING.

YOAK, *Jugum*, in *Antiquity*. The Romans made the enemies they fubdued pafs under the yoke, which they called *fub jugum mittere;* that is, they made them pafs under a fort of *furcæ patibulares*, or *gallows*, confifting of a pike, or other weapon, laid acrofs two others planted upright in the ground. This done they treated them with humanity enough, and fent them home again. See FURCA.

The fame meafure was fometimes dealt them by their enemies upon the fame occafion. Thus Cæfar (lib. ii.) obferves, that the conful L. Caffius had been killed by the Swifs, and his army defeated, and made to pafs under the yoke.

YOAK *of Land, jugata terræ*, in our *Ancient Cuftoms*, was the fpace which a yoke of oxen, that is, two oxen, may plough in one day. See HIDE, YARD-*Land*, &c.

YO-CHIN, in *Geography*, a town of Corea; 10 miles N.E. of Han-tcheou.

YOCKLET. See JOCKLET.

YOCOM CREEK, in *Geography*, a river of Virginia, which runs into the Potomack, N. lat. 38° 6′. W. long. 76° 36′.

YOCOTE, a town of Hindooftan, in Dowlatabad; 27 miles S.S.W. of Mahur.

YOGESWARA, in *Hindoo Mythology*, a name of the Hindoo god *Siva;* which fee. It means lord of ages, or of time; yug, or yog, being vaft periods of time into which Hindoo chronologifts arrange the paft. The addition of Ifwara, the powerful, a name of Siva, feems to give a fatisfactory derivation. (See ISWARA.) For an account of thofe periods, fee JOGUES. Some have derived the name of Yogefwara from lord of Yogis, fuppofing the fect of fanctified beggars fo defignated as being more immediately under the protection of Siva; but this is in fact nearly the fame thing, for yog fignifies *union* or *junction*, and thefe periods of time re-unite all things in the Deity; and the Yogi by intenfe contemplation effects a fimilar union. But this metaphyfical dogma cannot be explained here. See KALPA, YOGI, and YUG.

YOGI, a defcription of wandering faints, much refpected by many of the natives of India, though by others they are ftrongly fufpected to partake more of the impoftor than the enthufiaft. There are many defcriptions of thefe itinerants among the Hindoos; and we are not aware that the diftinctions between them have been accurately pointed out. The appellation Yogi means a devout man, devoted to fpiritual things, efpecially to the contemplation of the attributes of the Deity. It is derived from yog or yug, which, among very many fignifications, means primarily *union* or *junction*, and is applied in this fenfe to one who by intenfe meditation is united to the divine nature; a myfticifm eafily underftood by the initiated and enthufiaftic Hindoos, though not recognizable by others. There is a difference, we believe, between the Yogi and Saniaffy, but we cannot exactly fay in what it confifts. In the latter part of the article SECTS *of Hindoos*, fome particulars of thefe two will be found. Perhaps the Yogi may be the defignation of the Vaifhnava, and Saniaffy of the Saiva fect. (See SAIVA, VAISHNAVA, and YOGESWARA.) Both profefs poverty, purity, and aufterities. When the latter are carried to any extent, the zealot is honoured with the title of Tapafwi, of whatever fect he be. Of fuch, and their aufterities, fee under TAPAS. We fometimes read of female anchorets denominated Yogni; but they are, we believe, merely enthufiaftic females, who become afcetics and not the wives of the fanctified males. Among the oriental manufcripts prefented to the Royal Society by fir W. Jones, is one entitled "Hatha Pradipaca, or Inftructions for the Performance of the religious Difcipline called Yoga."

In the Gita, Krifhna defcribes the Yogi as being "more exalted than the Tapafwi, the zealot who haraffes himfelf in performing penances: he is refpected above the learned in fcience, and fuperior to thofe attached to moral works." This paffage is quoted in the latter part of our article SECTS *of Hindoos*, but being erroneoufly pointed is fcarcely intelligible. This article being thence referred to, we take the opportunity of correcting another error or two in it:—In the fecond column, the name of the Mahratta Brahman general, Purferam Bhow, is twice fpelled Bhon; in the fifth column, the name of Vopadeva, the author of the Sri Bhagavata, is fpelled Vapadeva; in the next column, line 21 from the bottom, a comma is wanted after Krifhna. Having referred above to the article TAPAS, we will here correct an error in that alfo:—In fecond column, line 11, for inflexions read inflictions.

YOHOGANY, in *Geography*. See YOUGHIOGENY.

YOIDES, in *Anatomy*, the bone of the tongue, commonly called hyoides. See HYOIDES.

YOINGT, or JOINGT, in *Geography*, a town of France, in the department of the Rhône and Loire; 7 miles E. of Roanne.

YOITSBACH, a river of Silefia, which runs into the Queis, near Friedberg.

YOKE, in *Agriculture*, a frame of wood hollowed out and lined for receiving the neck part of the ox or other cattle in working. Yokes are conftructed in different manners, as fingle and double, in order to be ufed differently. They are fixed with bows over the necks of the oxen or other cattle when in ufe; by which means, in the latter fort, the two animals are coupled together, and attached to the plough or other vehicle. See YOKING.

YOKE, in *Sea Language*, a name formerly given to the tiller, when communicating with two blocks or fheaves affixed to the inner end of the tiller. It is now applied to a fmall board or bar which fits on the upper end of a boat's rudder at right angles, and having two fmall cords extending from its oppofite extremities to the ftern-fheets of the boat, by which fhe is fteered as with a tiller.

YOKED LEAF, in *Botany*, *folium conjugatum*, or *binatum*. See LEAF.

YO-KEOU, in *Geography*, a town of Corea; 38 miles S. of Haimen.

YOKING, in *Agriculture*, the practice of putting the animals into the yoke or other fort of team.

In the bufinefs of yoking or harneffing oxen for the purpofe of draught, different methods have been followed by different farmers. And the modes of harneffing and yoking oxen are even different in different counties, and diftricts of the fame county. The moft common practice in the fouthern parts of this kingdom, is that of working them in harnefs in the manner of horfes; while in the northern counties, the yoke and bows are ftill much employed. On the continent, as in France, Portugal, &c. the head is the part to which the draught is chiefly attached.

In the firft cafe, the fhoulder is made the principal point of draught; but in the fecond method, the neck and fhoulder conjointly have the weight of the draught; and in the laft mode, the principle of draught is, in one cafe the head, and in the other the joint power of the neck and bafe of the horn, which lord Somerville has confidered a purchafe as great perhaps as can be given to the animal.

It is "effected by a long leathern ftrap, wrapped round the

the base or bottom of the horns, and again fastened to the yoke." It has been observed by a writer in the ninth volume of the Agricultural Magazine, that with respect to the second method which has been noticed above, the "usual form of the yoke is a frame of wood fitted over the necks of the oxen, by which they are coupled, and harnessed to the plough. It consists of several parts, as the yoke properly so called, which is a thick piece of wood, lying over the neck; the bow, which compasses the neck about; the stitchings and wreathings, which hold the bow fast in the yoke, and the yoke-ring and ox-chain," which is supposed "a method which is evidently founded on a total mistake in the anatomy of the ox."

And that in the first we have "imitated the gear used with the horse, without considering that the strength and agility of the ox are placed by nature in a different situation. The neck of the ox is a tower of strength; if the soil resist, he projects this part of his form with that prodigious muscular force with which nature has provided him for his own defence; but without attending to her operations, we impose a load of timber on his withers, we lacerate his flesh, and press him down to the earth."

The third or French mode of yoking is thus described in the words of Mr. Hughes. "The labourer passes a piece of wood, of about one-sixth of the weight of the English yoke, across the forehead of his cattle, having previously neatly hollowed out the extremities of it to fit the mould of the head, and lined those hollows with a piece of woolly sheep-skin, to answer the purpose of a soft pad or cushion. This light and easy yoke he braces to the horns with a small thong of leather, attaches the beam of his plough to the middle part of it, and the animal is completely equipped for his labour."

It has been observed by lord Somerville, in his System of the Board of Agriculture, that oxen, "whether worked in harness, or in the yoke and bow, as in England, by the joint power of the yoke and horn, as in Portugal, or by the head, as in France, they cannot fail to benefit their employer. As, however, the yoke and bow have prevailed for a considerable length of time, it is probable that the practice may still prevail, in which case the Portuguese mode of draught will apply with the utmost ease and success to our yoke and bow, so as gradually and imperceptibly to cheat oxen into its use. This in itself is an obvious advantage, because it gives two points of draught instead of one, and thereby relieving each admits of a lighter yoke, which in this country has ever been far too heavy and oppressive; and if hereafter the French method should be preferred, for which there are not wanting advocates, it is the best preparatory step to its introduction. It would be almost superfluous to remark that the strong points of an ox are in his head and neck. It is ordained by nature, that where the strength of an animal lies, there he will resort for defence; the horse to his heels, the man to his arms, and the ox to his head; and in cases of the greatest exertion, the beast ever puts his nose close to the ground."

In objection to the harnessing of oxen, it has been observed in the paper noticed above, that "the article of gear is an oppressive annual charge, from the perishable nature of the commodity employed. The tackle there recommended for twelve oxen would not amount to six-and-thirty shillings, whereas the leathern harness for the same number of animals, according to the new method, would cost six-and-thirty pounds, and the annual expence of repairs would exceed thrice the original cost of the former." And that "by the French mode of yoking, at least one-third more of the power of the animal is obtained. In the common way, the shoulder being bruised by the unyielding bow, no vigour is exerted, excepting what is imparted by the goad; and the sinews of the neck are not brought into employment: hence the sublime and gigantic force with which he is endowed is not rendered subservient in the important duties he has to perform for the supply of human subsistence. The cattle proceed in the French team bold and erect: no pain oppresses them, and they chew the cud cheerfully as they pace along the furrow. On the contrary, in this country the painful pressure obstructs the progress of the animals, they lean against each other, scarcely capable of supporting their own weight, and the fine intelligent eye which nature has given them to express the generosity of their temper is clouded with anxiety." That "the trial of this method has at least two recommendations; it may be made at very little expence, and under the fair expectation of success." See TEAM.

The methods of yoking cattle in ploughs are also different in different places; but the only circumstance worthy of being considered is, whether the cattle should be yoked in pairs, or in a line before each other. It may, therefore, be useful to consider the advantages and disadvantages attending each mode, and to compare them.

The most common way of yoking cattle in ploughs is in pairs. There are some disadvantages attending this way that are obvious. In ploughing the furrows betwixt ridges, the land-cattle go upon the ploughed land, and tread it down with their feet: this, especially if the land be wet, poaches and hurts it very much. And there is another disadvantage which is very obvious. When there is but as much of the ridge unploughed as to allow the land-cattle to go upon it with difficulty, they are frequently either going into the opposite furrow, and thereby giving the plough too much land, or, which is worse, they are jostling the furrow-cattle upon the ploughed land.

In order to remove the inconveniences which attend the ploughing with cattle yoked in pairs, some yoke them in a line before each other. It is obvious, that cattle yoked in this manner, going always in the furrow, neither tread upon the ploughed land nor jostle one another. In these respects, the yoking the cattle in a line before each other seems to have the advantage. It is to be observed, however, that this method is not quite free from inconveniences. When examined, it may, perhaps, be found attended with as great inconvenience as the other. Where cattle are yoked in a line, they go all in the furrow. This makes it necessary to give the plough more land than ordinary, either by the sock or the muzzle; for if this be not done, the head and sock being in the same direction with the beam, and the cattle yoked to the middle of it, the plough will directly follow the cattle without taking any thing off from the land. Now it is inconvenient to be obliged to give the plough land either by the sock or muzzle; for when the sock is turned out of the plane of the beam, it makes the plough heavy to draw; and when the muzzle puts the draught too much to one side of the beam, it prevents the plough from going upright. The yoking of the cattle in pairs is attended with none of these inconveniences; for in this case, the quantity of land which the plough has naturally, when right made, is sufficient to make it take off a proper furrow.

There is another inconvenience that attends yoking cattle in a line, arising from the nature of the animals, which is, that as they like their ease, they are disposed to throw the burden upon their fellows. This they have a better opportunity of doing when yoked in a line before each other than when yoked in pairs. When yoked in a line,

line, each pulls by the traces of the one behind him; and therefore, though it may be known when the foremoſt neglects his work, by the ſlackening of his traces, it cannot be known when any of the reſt neglect their work; for though one of them does this, yet by the pulling of the one before him his traces may be fully ſtretched. But this is eaſily diſcovered when the cattle are yoked in pairs; for then every one of them has a ſeparate draught.

There is ſtill another inconvenience that attends the common way of yoking cattle in a line before each other. When the fore cattle are all yoked to the traces of the hindmoſt, it is obvious, that as the beam to which the draught is fixed is much lower than his ſhoulders, by which the reſt pull, ſuch a weight muſt be laid upon his back or ſhoulder, as muſt render him incapable of giving any aſſiſtance. Beſides, as the whole force is applied in the direction of the traces of the hindmoſt, it cannot have ſuch influence on the plough, as when a part of it is in a direction more horizontal. When a body is to be moved forward in any direction, the nearer that the direction of the force applied approaches to the direction of the body, it acts with greater influence; and, therefore, as the plough moves horizontally, and as the direction of the united draught of a plough with the cattle yoked two abreaſt is more horizontal than the direction of the draught in a plough with cattle yoked in a line, the ſame force applied will have greater influence.

When theſe two different ways of yoking cattle in ploughs are thus conſidered and compared together, it is difficult to determine which ought to be preferred. Each of the two ſeems preferable to the other in a certain ſituation. When the land is ſtiff, and the labour ſevere, the yoking the cattle in pairs ſeems preferable, as it is certainly the ſtrongeſt draught; and when the land is wet, and in danger of being much hurt by the treading of the cattle, the yoking them in a line before each other ſeems preferable; as thereby they are confined to the bottom of the furrow, which is the firmeſt part of the land, and prevented from doing harm.

In wet lands and ſeaſons, as long teams anſwer beſt, for the moſt part, collars and trace-chains become of conſiderable utility in moſt caſes in yoking of cattle; and in whichever way neat cattle are geared for work, they ſhould conſtantly have bridles or bit-halters, with blinders, as by ſuch means they are rendered docile, tractable, and eaſy to manage in the buſineſs of team labour. Much information on this ſubject may be ſeen in the Corrected Report on Agriculture for the County of Suſſex.

YOKULS, in *Geography*, the higheſt mountains in Iceland, perpetually clothed with ſnow. Of theſe, Snæfial, hanging over the ſea on the S.W. part of the iſland, is ſaid to be the higheſt, its height being computed at 6860 feet. The mountains are ſaid to be chiefly ſand-ſtone, pudding-ſtone, with petroſilex, ſteatite, and argillaceous ſchiſtus.

YOLK, or YELK, in *Natural Hiſtory*, the yellow part in the middle of an egg. See EGG.

The chicken is formed out of and nouriſhed by the white alone, till it be grown to ſome bulk: after which the yolk ſerves it for nouriſhment; which it likewiſe does, in part, after it is hatched. For a good part of the yolk remains after excluſion; being received into the chicken's belly: and being there reſerved, as in a ſtore-houſe, is by the ductus inteſtinalis, as by a funnel, conveyed into the guts, and ſerves inſtead of milk. Willughby's Ornithol. lib. i. cap. 3.

This was even known to Pliny:—"Ipſum animal ex albo liquore ovi corporatur: cibus ejus in luteo eſt." Lib. x. cap. 53.

YOLK, in *Rural Economy*, the peculiar munctuous ſecretion which exudes through the ſkins of ſheep, and which by intermingling with the pile of the wool renders it ſoft, pliable, and in proper condition. It has ſomewhat the ſame effect on it which oil has upon a thong of leather, when kept in and perfectly ſaturated with it. The diſpoſition to the production of this ſubſtance in ſheep is favourable to the valuable properties of the wool, and ſhould be attended to by the ſheep-farmer in fixing and regulating his ſtock. It is noticed by a late writer on Agricultural Chemiſtry, that wool often waſhed in calcareous water becomes rough and more brittle than uſual, as the carbonate of lime has the power of diſſolving or decompoſing the yolk of it, which is an animal ſoap that naturally defends it; that the fineſt wool, ſuch as that of the Spaniſh and Saxon ſheep, is moſt abundant in yolk; that M. Vauquelin has analyſed ſeveral different ſpecies of yolk, and has found the principal part of all of them a ſoap, with a baſis of potaſſa, that is, a compound of oily matter and potaſſa, with a little oily ſubſtance in exceſs; and that he has likewiſe found in them a notable quantity of acetate of potaſſa, and minute quantities of carbonate of potaſſa and muriate of potaſſa, and a peculiar odorous animal matter.

The ſame chemical writer has ſtated, that he found ſome ſpecimens of wool loſe as much as forty-five *per cent.* in being deprived of their yolk; and that the ſmalleſt loſs in his trials was thirty-five *per cent.*

It is ſuggeſted in the above work, that the yolk is the moſt uſeful to the wool on the back of the ſheep in cold and wet ſeaſons; and that probably the application of a little ſoap of potaſſa, with exceſs of greaſe, to the ſheep brought from warmer climates in our winter, that is, increaſing their yolk artificially, might be uſeful in caſes where the fineneſs of the wool is of great importance. A mixture of this ſort is more conformable to nature, it is thought, than that ingeniouſly adopted by the late Mr. Bakewell; but that at the time his labours began, the chemical nature of the yolk of wool was not known. See WOOL, WASHING *Sheep*, &c.

YOLK *of the Seed*, *Vitellus*, in *Botany* and *Vegetable Phyſiology*, a part firſt deſcribed by Gærtner, and thus named by him, from its ſuppoſed analogy with the yolk of an egg. This analogy, and even the exiſtence of the part in queſtion, have been diſputed, as Mr. Brown hints, in *Prodr. Nov. Holl.* v. 1. 306, by M. Correa de Serra, and by the writer of the preſent article. We have never at any time communicated on this ſubject with our learned and ſagacious friend, now the Portugueſe miniſter at New York; ſo that we are ignorant how far his objections extend, or on what they are founded. Nor does Mr. Brown know more of this matter, than a ſimple record of M. Correa's opinion, in De Candolle's Flore Françaiſe, v. 1. 157. This coincidence, however, from ſuch a quarter, gives us great confidence in our own opinion, which was firſt offered to the public in *Introd. to Botany*, chap. 19, publiſhed in 1807. On a more attentive and full conſideration of the queſtion, the ſame ſentiments were more explicitly detailed and defended in a paper read before the Linnæan Soc. Nov. 3, 1807, and printed in that Society's Tranſactions, v. 9. 204.

Gærtner ſtates the *Vitellus*, or Yolk of the Seed, to be "diſtinct from the *Cotyledons*, as well as from the *Albumen*, and for the moſt part ſituated between the latter and the *Embryo*." (See SEED, where a reference is made to VITELLUS, under which head the ſubſtance of the preſent article wa was designed to have been inserted.) Gærtner considers the part of which we are about to treat, as "of all the internal parts of a seed the most singular, and by far the most unfrequent." Its importance therefore cannot be very considerable. The principal diagnostics of the *Vitellus*, according to this eminent carpologist, are the following: 1st, "It is most closely connected with the *Embryo*, so as not to be separable therefrom, without injury to its own substance. 2dly, Notwithstanding this intimate connection, it never rises out of the integuments of the seed, as the *Cotyledons* usually do, in germination, so as to become a seminal leaf; but, rather like the *Albumen*, its whole substance is destroyed by the seedling plant, and converted into its own nourishment. And 3dly, If the *Albumen* be likewise present, the *Vitellus* is always situated betwixt that and the *Embryo*, in such a manner, however, that it may be separated from the *Albumen* with great ease, and without injury." For these reasons, Gærtner considers the organ in question as "allied on the one hand to the *Albumen*, on the other to the *Cotyledons*," but truly distinct in nature from both.

We presume to dissent from this decision of the great writer, whose words have just been quoted, for the following reasons: 1st, The *Vitellus* is certainly not more closely connected with the *Embryo* than the greater number of *Cotyledons* are, as any person may find by examining seeds in the first stage of their germination, and as the faithful delineations of Gærtner himself every where shew. 2dly, That the *Vitellus* never rises out of the ground, is a circumstance likewise common to many *Cotyledons*, allowed by Gærtner to be such, as in various leguminous plants, as well as in *Æsculus*, *Cyamus*, *Tropæolum*, and many others. The difference between *Cotyledons* which grow up into seminal leaves, and those which remain and decay under ground, is of so little importance as to the classification of plants, that the most natural order of *Papilionaceæ*, or *Leguminosæ*, contains decided instances of both; *Lupinus* and *Vicia* affording examples of the former mode of growth, *Lathyrus* of the latter. And 3dly, The situation of the *Vitellus*, between the *Albumen*, if the latter be present as a separate organ, and the *Embryo*, is only a necessary consequence of the more intimate connection between the *Vitellus* and the *Embryo*, than either of them has with any other part, except that of the *Cotyledons* and *Embryo*, which is as strict as can possibly be. Hence we cannot consider the *Vitellus* of Gærtner to differ from the subterraneous *Cotyledons* abovementioned. We presume their offices must be exactly similar, to perform the necessary functions relative to air or oxygen, till the leaves come forth, and assume those functions in greater perfection, with the co-operation of light. This appears to us more satisfactory than the hypothesis of Gærtner, that the organ of which we are treating affords nourishment to the *Embryo*; because this is abundantly supplied by the copious *Albumen* of a multitude of seeds, whose *Vitellus* is very inconsiderable, such as grasses; and it is recurring to two causes to explain what is evidently accounted for by one alone. If the vegetation of corn be observed, the *Vitellus* will be found to dwindle away, with scarcely any change in its very inconsiderable bulk, when the first leaves are unfolded, exactly as happens to the subterraneous *Cotyledons* of *Lathyrus odoratus*, &c. The same thing very often takes place as speedily in *Cotyledons* which rise out of the ground. Some which are more permanent, as in cruciform and umbelliferous plants, being only more of the nature of leaves. In grasses, the scale taken by Gærtner for a *Vitellus* is mostly so thin and unsubstantial, as not possibly to contain any material portion of nourishment; ample supplies of which are furnished by the plentiful *Albumen* of those plants. But its expanded figure is very well calculated, like that of the leaves, for functions analogous to vegetable respiration; and it has the evident aspect of a subterraneous leaf, quickly rendered superfluous by the production of real leaves, and withering away, as the first of those leaves themselves do, when more vigorous ones come forth. It is remarkable, that the pretended *Vitellus* appears not to be necessary to all plants furnished with this distinct kind of *Albumen*, as *Palmæ* and *Orchideæ* have it not; while, on the other hand, no instance presents itself of a supposed *Vitellus*, and a real *Cotyledon*, or *Cotyledons*, in the same plant. Gærtner takes the *Plumula* for *Cotyledons* in *Rhizophora* (see his t. 45.), as well as in some of the *Scitamineæ*; for we cannot conceive the tubular part, embracing the Embryo, in *Amomum*, (see Gært. t. 12, which he erroneously calls *Zingiber*,) to be any thing but a *Cotyledon*, notwithstanding the opinion of our learned friend Mr. Brown, who, like Gærtner, terms it a *Vitellus*. The name would be of little importance, if the supposed use of it did not convey, as we presume to think, an erroneous idea; in attributing to these seeds two distinct and separate sources of nourishment. That two such distinct parts exist in this natural order, and perhaps, as Mr. Brown observes, in *Nymphæa* and *Nuphar* likewise, we are ready to admit; and we are therefore more satisfied to attribute to each a separate and appropriate office. We have had no opportunity of observing the germination of *Amomum*, or any true scitamineous plant; but as far as we have been able to judge, it appears that the *Albumen* of every seed, when separate from the other parts, is always totally absorbed, or removed, leaving its skin empty; whereas a *Cotyledon* withers and shrinks in its whole substance, like a decaying leaf. If the albuminous matter, necessary for the temporary nourishment of perhaps every seed, in one form or other, be lodged in the substance of the *Cotyledons*, as in *Zamia*, the leguminous and cucurbitaceous tribes, and many others, such parts shrink the more, but do not lose any one particular portion of their substance, so as to have only a skin left behind. Perhaps a confusion of ideas has arisen, from the first consideration of this subject, in consequence of the term monocotyledonous as contrasted with dicotyledonous. The first had an evident reference to the *Albumen*, in corn, palms, &c.; and when Gærtner had emancipated himself from this error, he seems to have transferred the idea to the *Embryo*, which he calls *monocotyledonous*, as if he meant by that word to express its own simple form. Prepossessed with this idea, when a separate organ manifested itself, as in the *Scitamineæ*, he thought a new appellation requisite. Mr. Brown objects to the term *Cotyledon* in this case, because he says there is no point of union between the part in question and the *Embryo*. If such be the case, which we cannot understand, it would be not at all less difficult to conceive how this part could, as a *Vitellus*, supply the *Embryo* with nourishment, than it would be to imagine how it could perform any services towards that organ with respect to air, in its capacity of a *Cotyledon*.

It seems to us, that by considering the *Vitellus* of Gærtner as a *Cotyledon*, all ambiguity respecting the anatomy or component parts of any seed is removed. When the *Cotyledons* are two or more, the albuminous matter is either lodged in their substance, or forms a separate part. In the latter case, it has no more connection with the *Embryo* than is absolutely necessary, being in fact not an organic part, but a mere reservoir of food or nourishment, immediately undergoing a chemical change, after which its whole substance is speedily absorbed. Such is the economy of corn and palms; even the large *Albumen* of the cocoa-nut soon disappearing,

appearing, for the evolution and ſuſtenance of the little *Embryo*, lodged in a cavity of its baſe; while the *Cotyledon* of the not very diſtant genus *Zamia* ſhrinks indeed conſiderably, from loſing the albuminous part of its ſubſtance, but does not diſappear; becauſe the remaining part deſtined to perform the eſſential office of a *Cotyledon*, reſpecting air, merely decays when its purpoſe is anſwered, and ſloughs off, like any other dead portion of the vegetable body.

We have already (ſee GERMINATION) adverted to theſe two different ſituations of the albuminous matter. That ſubſtance muſt be preſent, in ſome ſhape or other, for the nouriſhment of the young *Embryo*, at the firſt period of its evolution, when ſo great an alteration of bulk takes place, till it can ſupply itſelf from the earth. The idea of this nutritious ſubſtance, whether of an oily, mucilaginous, or farinaceous nature, being always, when not a diſtinct body, lodged in the *Cotyledons*, throws additional light on the nature and phyſiology of theſe laſt-mentioned parts, and in a very beautiful manner confirms their analogy with leaves. The ſap of plants (ſee CIRCULATION *of the Sap*) being carried into the leaves, and there acted upon by air, light, heat, and moiſture, is returned in the form of various ſecretions, into the different parts of the vegetable body. Under the influence of light, the upper ſurface of their leaves abſorbs carbonic acid gas, and the under gives out pure oxygen. But in the dark, leaves abſorb oxygen. So the *Cotyledons* of ſeeds, in their dark ſubterraneous ſituation, being moreover often guarded expreſsly from light by a brown or even black ſkin, abſorb oxygen, which, as we have ſaid in the article above cited, is known to be neceſſary to germination. They are already ſtored with albuminous matter, abounding with the carbonic principle. This, by the action of oxygen, becomes ſaccharine and milky, fit to be tranſmitted, through the returning veſſels, which the *Cotyledons*, in common with *Leaves*, poſſeſs, into the ſtem of the *Embryo;* all theſe important parts having already begun to ſwell, from the abſorption of moiſture, and the ſtimulant effects of heat. Hence we ſee why light proves hurtful to incipient germination, and why carbonic acid gas may be given out by ſeeds during that proceſs. It is evident that the proper functions of *Cotyledons* are beſt performed under ground, and that when they riſe into the air and light, it is not till after their primary deſtination is fulfilled, and then only becauſe, being fundamentally of the nature of leaves, they are moſtly capable of aſſuming the functions of thoſe organs, with reſpect to light. *Cotyledons* of ſeeds are ſubterraneous leaves, juſt like the ſcales of a bulbous root. Both are ſtored with albuminous or nutritious matter, and when acted upon by oxygen perform under ground thoſe functions, which leaves perform in the open air, with the aſſiſtance of light. It is worthy of notice that the *Cotyledons* are ſo placed, in all ſeeds, that the oxygen gas muſt be imbibed by their under ſurface only, that very ſame part which, in leaves, gives out this kind of gas during the day, and probably abſorbs it at night. "It would," as we have elſewhere obſerved, Tr. of Linn. Soc. v. 9. 213, "have evinced a ſtrange contrariety in the conſtitutions of two organs otherwiſe ſo analogous, the *Leaves* and *Cotyledons*, if the *upper* ſurface of the latter, while in the unexpanded ſeed, had been preſented to receive the oxygen gas."

By taking the *Vitellus* of Gærtner for a *Cotyledon*, we throw no new difficulties in the way of the claſſification of plants by this organ. Its form is always, as far as we know, ſimple and undivided, ſo that the plants in which it occurs remain only the more ſteadily fixed in their place of *Monocotyledones*, as oppoſed to the *Dicotyledones;* witneſs *Gramina*, *Scitamineæ*, &c. thus indeed acquiring a right to ſuch an appellation, which they could otherwiſe ſcarcely claim, having, according to Gærtner's principle, no *Cotyledon* at all.

YOLOTOU, or YULDUZ, or *Cyalis*, or *Chialiſh*, in *Geography*, called by the Turks Keraſher, or the Black City, a town of Little Bucharia, ſituated in a country abounding with ſprings and fine meadows; 85 miles N.N.W. of Hami.

YOM-NIM-KIEN HOTUN, a town of Chineſe Tartary, on the E. coaſt of the gulf of Leao-tong; 263 miles E. of Peking. N. lat. 40°. E. long. 121° 34′.

YOM-TA-HOTUN, a town of Corea; 648 miles E.N.E. of Peking. N. lat. 42° 55′. E. long. 129° 37′.

YON, a river of France, in the department of the Vendée, which paſſes by La Roche ſur Yon.

YONGHELAHE, a river of the iſland of Madagaſcar, which runs into the ſea on the weſt ſide of the iſland, S. lat. 23° 30′. E. long. 47° 4′.

YONG-LI, a town of Corea; 30 miles S.E. of Koangtcheou.

YONG-NGAN, a city of China, of the ſecond rank, in Quang-ſi; 1027 miles S.S.W. of Peking. N. lat. 24°. E. long. 110°.

YONG-NGAO, a ſmall iſland near the coaſt of China, in Quang-tong; 20 miles S.S.E. of Macao.

YONG-NING, a city of China, of the firſt rank, in Yun-nan, on the borders of Thibet. A little to the E. of this town is a lake; 1095 miles S.W. of Peking. N. lat. 27° 50′. E. long. 100° 24′.—Alſo, a city of China, of the ſecond rank, in Quang-ſi; 977 miles S.S.W. of Peking. N. lat. 25° 6′. E. long. 109° 14′.

YONG-NING, or *Yung-ning*, a city of China, of the ſecond rank, in Koei-tcheou; 1027 miles S.S.W. of Peking. N. lat. 25° 55′. E. long. 104° 57′.

YONG-PE, a city of China, of the firſt rank, in Yunnan; 1150 miles S.W. of Peking. N. lat. 26° 42′. E. long. 100° 34′.

YONG-PING, a city of China, of the firſt rank, in Pe-tche-li, on a river which runs into the gulf of Leao-tong. This city is advantageouſly ſituated, but its juriſdiction is not very extenſive; it contains but one city of the ſecond order, and five of the third. It is environed by the ſea, by rivers, and by mountains, covered for the moſt part with fine trees: this makes the country leſs fertile, but the neighbouring bay ſupplies its want with great plenty of all the neceſſaries of life. Not far from this city ſtands a fort named *Chun-hai*, which is the key of the province of Leaotong. This fort is near the beginning of the great wall, which is built, for a league together, in a boggy marſh, from the bulwark in the ſea; 115 miles E. of Peking. N. lat. 39° 55′. E. long. 118° 34′.

YONG-SIN, a town of Corea; 113 miles E. of Hantcheou.

YONG-TCHANG, or YUNG-TCHANG, a city of China, of the firſt rank, in Yun-nan. This city is large and populous, and is built in the midſt of high mountains, on the borders of the province, in the neighbourhood of a ſavage people, whoſe genius and manners the inhabitants of this country partake of. The country produces gold, honey, wax, amber, and a vaſt quantity of fine ſilk. It has within its diſtricts one town of the ſecond order, and two of the third; 270 miles S.W. of Peking. N. lat. 25° 6′. E. long. 99°.

YONG-TCHEOU, a city of China, of the firſt rank, in Hou-quang; 882 miles S.S.W. of Peking. N. lat. 26° 10′. E. long. 111° 15′.

YONG-TONG, a town of Corea; 40 miles E. of Het-fin.

YONI, in *Metaphyfics*, the name of a myfterious fymbol among the Hindoos; which, although contemplated with refpect and awe by that fuperftitious race, is yet of fuch a nature as not to be difcuffed without difficulty in the living language of a country which has happily fhaken off the trammels of priestcraft; and views with pity, mixed with juft abhorrence, the idolatrous propenfities of thofe ftill retained in mental bondage; accompanied, as we find they were, among many ancient people, by the indecencies of impure rites, fcarcely yet difufed, even in Europe, and exifting in almoft undiminifhed groffnefs in the ftill unenlighted regions of Afia.

The reader is fuppofed to be more or lefs aware of the nature of the orgia incident to the worfhip of fuch deities as Pan, Priapus, Bacchus, Venus, &c. We do not here inquire particularly into the origin of fuch rites. In their earlier ftages, they were probably an innocent ebullition of gratitude for the experienced bounties of nature. In the lapfe of time, a concourfe of people of both fexes, warmed by exercife and beneficent feelings, at a genial feafon moft likely of the year, found, as is ever the cafe, their unreftrained devotion fublimed into enthufiafm; and hurried by fuch feelings beyond the fcope of unaffifted reafon, gave themfelves up to the extravagances of myfticifm, and in the end to exceffes which not only Chriftians, but the decent of every fect and country muft unite in reprobating. Thefe Bacchic phrenzies were accordingly fuppreffed or mitigated as to their oftenfible ufages and tangible abominations. Nature, in the phrafeology of certain fects, was no longer propitiated through the indulgence of feelings of her own prompting, excited farther by the prefence of unequivocal exhibitions. She, ftill perfonified, was more decently reprefented by certain fymbols fubftituted for the earlier types. The cunning prieft no longer daring to exhibit their obfcenities in fhamelefs nudity, permitted only a portion of indecency to remain in the hands and eyes of their deluded votaries, and concealed their origin and meaning in the various myfteries and hieroglyphics denominated Bacchic, Eleufinian, Phallus, Linga, Yoni, Cone, &c. &c. Some notice of thefe things, and of the ordinary courfe and confequences, will be found under the appropriate articles of our work; alfo in MYSTERY, MYSTICS, and others thence referred to.

By fuch people Nature was contemplated chiefly under her attribute or property of fecundity; and fymbols of generative allufion were thofe under which her prolific potencies were exhibited. Thofe prone, like the Hindoos, to refolve almoft every thing into fexual allegory, of courfe fancied the male and female pudenda omni-archetypal. Thefe, in the early days of fuch perverted devotion, were probably pourtrayed in India, as elfewhere, without referve; but were, in moft cafes, foon corrected into the comparative decency of the hieroglyphics; and the deluded people were cajoled by mummery and myftery, that became lefs and lefs underftood, and therefore, perhaps, the more reverenced. We have faid in moft cafes; for in Egypt and Greece the groffnefs of Phallifm is known only in the remains of antiquity; in India it doubtlefs exifts, but divefted of obtrufive or confpicuous indelicacy; and too true it is that among Chriftians was the primeval infamy of the fymbol and ufage moft tenacioufly retained. We can but juft allude to the difcovery of this curious though lamentable fact, by fir William Hamilton, in the neighbourhood of Naples. His communication, with ample commentary and illuftration, has been printed, but very properly not publifhed; concealed, though not fuppreffed; and we therefore make no direct reference to the fufficiently inftructive, though too difgraceful volume, in which this difgufting worfhip is proved to exift in Chriftian Europe, and is traced almoft all the world over.

Among the Egyptians, Greeks, and Romans, the Phallus and the Cone feem to have been the earlieft of the groffer and corrected emblems; the latter contained both the Linga and Yoni, nature active and paffive; and fimilar, familiar, or recondite meanings and allufions were thus readily revived in the minds of the vulgar and the initiated, fuitable to the efoteric or ifoteric nature of their capacities and feelings. Thefe fooleries, to give them no harfher name, thus found to have exifted among the people juft mentioned, and others, have, with great appearance of reafon, been fuppofitively derived from the ftill more ancient ufages of India. Much might be faid in fupport of this, were it worth while; and thus far the inquiry will probably be repaid, that it may bring to light many ftrange coincidences. If fuch writers as Colebrooke, Wilford, Faber, and others, who bend their minds to the developement and elucidation of Eaftern literature and myfteries, continue for a while in the fame line of refearch, we anticipate a confirmation of the furmifes long entertained, that nearly all the learning, fcience, and art, as well as the religion of Egypt and Greece, originated in India, or at leaft with the Brahmans; however much they may have been improved or embellifhed by the hands through which they reached us.

India then, or the country of the Brahmans, wherever that was, being in our judgment the region where the fuperftitious practices now under our confideration originated, we may expect to find its early hiftory teeming with allufions to it. This is indeed the cafe; though fuch allufions are not, perhaps, found in its *earlieft* works on theology. But as no people have changed fo little as the Brahmans and their flock by the innovations of ftrangers, or the lapfe of time, (for frequent fubjugations by conquefts feem to affect them but little, and perfecutions ferve only to confirm their prejudices,) we may expect to find their religious inftitutions and practices more in accordance with thofe of their early days than the ufages of other people who have not difdained to become wifer by the operation of reafon and philofophy; and who have been taught to look on the follies of their anceftors with the pity they deferve. In India, we thus find certain hieroglyphics ftill receiving the external adoration fo little their due. There we find the infidious Brahman ftill teaching his ignorant fuppliant to fall down and worfhip the Linga and Yoni; fymbols, in whatever fhape exhibited to the public eye, no doubt fitter for the brothel than the temple. The former of thefe is the attribute of Siva, the Maha-deva, or great divinity prefiding over reproduction, or regeneration in the abftract; and the other of his confort Devi, or Parvati, the Magna-Mater, the Bona Dea of the Eaft.

In preceding articles, we have neceffarily touched on the character and attributes of the two juft mentioned grand divinities of the Hindoos; and refer our readers to PARVATI and SIVA for our remarks thereon, and to LINGA for a brief notice of the Phallic worfhip of India. In this article, we propofe to difcufs that ftill offered to the Juno, the Venus, the Ifis, the many-named all-abforbing goddefs of the Hindoos, whofe emblem is the Yoni.

Writers on this fubject generally, perhaps unavoidably, commix their fpeculations on the Linga and Yoni. Crude nature is perſonified, and called Prakriti; ſhe is declared to be nature, or the earth, the womb of nature; ſhe is thence any thing conceiving or containing, or the power or ſakti of ſuch faculties. In its firſt ſtate that *power* was rather a tendency, an aptitude, and laid dormant until excited by the *bija*, or vivifying principle, the *aura* of nature perſonified in Siva, who in this character is called Paruſha, or the primeval male. Here we find nature paſſive and active: the power or aptitude of nature is ſymbolized by the Yoni; the vivifying principle by the Linga. Prakriti is found to be one of the names and forms of Parvati, as Paruſha is of Siva. Under theſe names we have taken ſome notice of their character; but it is not eaſy, in the ſhort articles to which, in theſe matters, we muſt reſtrict ourſelves, to explain fully, were we able, the nature and alluſions of theſe abſtract perſonifications.

The faculty or power of containing, of which the Yoni is the type, is alſo called Argha by Hindoo myſtics. The name is given to a cup or diſh, or *veſſel*, in which fruits and flowers are offered in oblation. Theſe veſſels, they ſay, ought always to be *boat-ſhaped;* and ſo they frequently are, but ſometimes round, oval, or ſquare; moſtly, however, circular. All this is myſterious and profound. The rim of the Argha is more eſpecially the Yoni, while the contents of the veſſel repreſent the Linga, which is ſometimes more unequivocally figured by an image of Siva ſtanding erect in the centre of the Argha. Hence one of his names is Arghanatha, or lord of the boat-ſhaped veſſel. We may ſtop a moment here to remark how readily Bryant, Faber, and the race of Noetics, would have recognized the ark, in the arga or arka, or ark, as it may without much licence be written, of the Hindoos. We do not heſitate to hint our belief that many of the fables connected with Colchis, Juno, Io, Ionia, Jonah, &c. are traceable upwards to Hindoo words: many alſo connected with the names of places or perſons, beginning with Col or Kal, or containing its root, that are ſcattered in unmeaning profuſion through the geography and early biography of Europe. But this is not the place to enlarge on this ſubject.

The Argha, as a type of the *power of conception*, excited and vivified by the Linga or Phallus, Mr. Wilford (Aſ. Reſ. vol. iii.) ſuppoſes to be one and the ſame with the ſhip Argo, which, according to Orpheus (Argon. v. lxvi.), was built by Juno and Pallas, or, according to Apollonius (b. ii.), by Pallas and Argus, at the inſtance of Juno. The word Yoni, as it is uſually pronounced, nearly reſembles the name of the principal Etruſcan goddeſs; and the Sanſkrit phraſe Arghanatha Iſwara ſeems accurately rendered by Plutarch (on Iſis and Oſiris), when he aſſerts that Oſiris was commander of the Argo. That the Sanſkrit words *p'hala*, meaning fruit, and *p'hulla*, a flower, had ever the ſenſe of *phallus*, is not affirmed; but as theſe are the chief oblations in the Argha, and are confeſſed to be a repreſentation of the Linga, their ſounds may eaſily have been ſo transferred. We have ſeen, too, that Mahadeva himſelf, the prototype of the Linga, is ſometimes placed erect in the Argha: this is to complete a myſtical triunion of powers; for Viſhnu, the principle of humidity and of conſervation, is ſymbolized by a convexity or emboſſment in the centre of the Argha, over which the image of Mahadeva, or the p'hala and p'hulla, as repreſenting the Linga or Phallus, are placed. The idea that the Sanſkrit p'hala or p'hulla may in ſenſe as well as ſound be cognate with and the ſource of the Greek phallus, derives ſtrength from the fact that Mahadeva, in his character correſponding with that of Jupiter Marina, or Neptune, bears, like his Roman kinſman, a trident, called Triſula, and ſometimes Triphala, denoting trifurcation and trifloreſcence. Jupiter Triphylius is thus identified with the three-eyed Siva, who in this form is named Trilokan and Triſula.

That the Sanſkrit language is very widely ſpread, and is traceable in various dialects, we have the authority of Mr. Colebrooke for believing. In the names of places, we are inclined to think its extenſion is proved as much as in any point: and we do not deem the idea very extravagant (ſays our correſpondent) that derives the name of Trafalgar, the ſcene of the laſt grand triumph of the Britiſh Neptune, from the mythological language of our fellow-ſubjects of India.

To return to the Yoni or Argha, we have ſeen that the veſſel under the latter denomination is boat-ſhaped, and a type of the world. In the general Deluge, the generative powers of nature, male and female, reduced to their ſimpleſt elements, the Linga and Yoni, aſſumed this ſhape for the preſervation of mankind. Brahma, the creative power, is repreſented to have been aſleep at the bottom of the abyſs. This alludes, we ſuppoſe, to the deſtruction of mankind; man being repreſented in the abſtract by Brahma. The Yoni becoming boat-ſhaped, the Linga was the maſt, and protected by Viſhnu rode upon the waters. This, though ſufficiently groſs, is doubtleſs an arkite allegory. Every thing hollow or concave having the property of containing, remind myſtics of their type the Argha or Yoni, as aſpiring objects do of the Linga. Enthuſiaſts ſee theſe two principles; that is, they ſay, nature paſſive and active, dormant and revivified, every where and in every thing,—the earth, the ſea, a boat, a well, a pond, the hollow of the hand, clefts in rocks, excavations, caves, commiſſures of branches, &c. partake of relationſhip with the one,—mountains, eſpecially if inſulated and conical, pyramids, cones of any ſort, fire, a maſt, a tree, eſpecially if denuded of branches, obeliſks, &c.—all theſe connect themſelves with ideas of Mahadeva and the Linga. The earth is typified by a boat; the Argha of the Hindoos, and the Cimbium of the Egyptians. Oſiris is repreſented in a boat carried by men: in India, Mahadeva erect in the Argha refers to the ſame allegory. All over India, the Argha, and Linga of ſtone inſerted in it, is found an object of worſhip. It is ſtrewed with flowers, and water is poured on the Linga, and conveyed off by the rim or Yoni; the foſſa navicularis or myſtical boat of Iſis.

Caves we have noticed as types of the Yoni, from their property of hollowneſs or containing, and alſo from the ſhape of their mouth. It will be recollected, that the moſt ancient oracle and place of worſhip at Delphos was that of the earth in a cave, which was called Delphi; an obſolete Greek word, ſynonymous, according to Mr. Wilford (Aſ. Reſ. vol. vi.), with Yoni in Sanſkrit. Similar ſuperſtitions have prevailed farther weſtward. Perforations and clefts in ſtones and rocks were called Cunni Diaboli by early Chriſtians, who uſually beſtowed the appellation of devils on the deities of the heathens. One of the wonders of the peak in Derbyſhire retains an appellation ſtill coarſer: but Mr. Wilford thinks improperly; for this wonderful cave, or one he ſays very like it, particularly noticed in the Puranas, is declared to be the ſacred Yoni. The cleft called Guhyaſthan, in Nepal, anſwers fully and literally to the coarſe appellation of its relative in Derbyſhire, (Guhya, or Podex,) and is devoutly worſhipped by numerous pilgrims from all parts of India. Perforated rocks or ſtones, as well as the mouths of caves, are myſtically contemplated in India. A regeneration is effected by paſſing through them; or, if the hole be too ſmall, a hand or a foot thruſt through, with a ſufficient faith, will nearly anſwer the ſame purpoſe.

It

It is difficult to difcufs fuch fubjects as thefe without feeling a certain degree of contempt, pity, and wonder, at the fooleries of creatures called rational. But when we recollect that many millions, hundreds of millions probably, of our fellow mortals are, or have been, thus mifled, and have been fimilarly mifled in all parts of the world, the origin and fpread of fuch ufages become a fubject not unworthy the inquiry of the philofopher: as connected probably with the hiftory of ftupendous events in facred hiftory, it claims alfo the attention of the theologian; and the total difufe of all fuch irrational fuperftition among ourfelves is a matter of gratulation to us as reformed Chriftians. We are difpofed, however, to view it in all cafes as an invention and engine of priestcraft, and not much more to be charged on the religion of the Hindoos and others, than the mummeries practifed at Loretto, Naples, and elfewhere, are juftly chargeable on Chriftianity.

Connected with the fymbols and rites of the Yoni, we had prepared to offer fome remarks fhewing the fpread of fimilar fuperftitions almoft all over Europe, as well as in other regions. And, indeed, although their origin and allufion are now wholly forgotten, curious obfervers may difcern in ftill exifting ufages occafional relics of this fpecies of devotion even in England. It is inexpedient, however, to indulge in this extended view.

Adoration of ftones is found fimilarly fpread through the fuperftitious ages of all nations. The Hindoos retain it with undiminifhed bigotry; and will affirm, and indeed go nigh to prove, that fuch objects, from the facred monolithic fubject of the Kaaba at Mecca, or the obelifks of Egypt, to the trilithic temple at Stonehenge, with many intermediate, are no other than their Linga, under various forms and denominations. The Bætilia of antiquity are nearly related to it. Under BÆTYLOS, CROMLECHE, KISTVAEN, STONEHENGE, and other articles of this work thence referred to, the reader may, if defirous, fee the extent of fpeculation to which the fuperftition connected with *Lithifm*, if fuch a term may be allowed, has given rife.

Clefts in rocks, rent by the hand of nature, may therefore be fuppofed to be profoundly venerated by fuch enthufiafts as are Hindoo myftics. One of the moft celebrated in India, as far as we have heard, is at the promontory on the ifland of Bombay, called by the Englifh Malabar point. The promontory itfelf, thrufting its apex into the fea, which there forms a fandya, or junction, (fee JUNCTIONS,) is *Lingaic*. It ufed to be much reforted to, and its fin-expelling potency much relied on, before its purity and privacy were polluted and interrupted by the prefence of ftrangers, and the increafing population of the ifland. The unequalled denfity of its prefent population, and the extending prevalence of foreign manners, have leffened the fanctity of this fpot, now the conftant refort and abode of perfons who look on the local fuperftitions with an eye too rational or curious—or fevere fhall we fay?—to encourage their continuance. Like the Lithic Linga temple of its neighbouring ifland of Elephanta, as the Englifh call it, the Yoni of Malabar point will foon ceafe to be reforted to. Its fine temple is levelled to the rock whence it arofe, and fome of its fpoils adorn the Mufeum at the India Houfe. The neighbourhood of Bombay was in former times a grand affemblage of Hindoo temples. The great beauty and falubrity of the fituation, the forms of the hills and iflands, and other real and fanciful advantages, combined to give it high charms to the tafteful and cunning Brahman. An ifland rifing conically is, we have feen, itfelf a Linga, its fhores a Yoni, the ocean an Argha. The demoralizing effect of this perverted philofophy on the mind of the fimple Hindoo might be exemplified by a citation from our great dramatic poet, flightly altered:

" —— And this their life, exempt from public haunt,
Found Lingas in ftones, Arghas in running brooks,
Yonis in rocks, and gods in every thing."

Paffing through fuch clefts as we have juft noticed with a piacular or expiatory view is, or rather has been, of extenfive prevalence. We could fhew it to have exifted in many parts of Europe. Relics of it ftill exift in England. And indeed fuch is the recent rage of theological innovation, and the amazing increafe of credulity, that a zealous fectarian need not defpair of feeing thefe, or ufages equally ridiculous, revived among us. But it would not fuit the crafty Brahmans to allow rich delinquents fo eafy an expiation as the paffage through a cleft or Yoni of rock. In certain cafes of defilement, it is required that an image of pure gold be made of the female power of nature, either in the form of a woman or of a cow: in this ftatue, the perfon to be regenerated is enclofed, and is protruded through the ufual channel. As this evidently muft be enormoufly expenfive, it is of courfe rarely reforted to. An inftance is given in the Hindoo Pantheon, p. 398. of a recent cafe where a Yoni of gold was the medium of regeneration to two Brahmans, who had fuffered pollution by coming to England. The defilement of a natural birth is done away by the protrufion of the perfon or head through a facred thread called *Zennar*. (See that article.) This regeneration is effential to Brahmanical purity, and is alfo required of the two next tribes. The individuals thereafter are denominated *twice-born*. The fourth tribe is not allowed to be thus purified, and is therefore confidered as bafe and unclean. See SECTS *of Hindoos*.

Enough has been faid under this article to fhew the myfterious bearing of its title. It is a fubject which, connected with the Linga, meets the obferver or inquirer directly or allufively, though not oftenfibly, or very often in an offenfive form, at every ftep he takes in the inveftigation of Hindoo literature or antiquities. Refpecting the non-offenfivenefs of their appearances, we refer to our article LINGA; of which indeed this may be confidered as a continuation. The fubject is inexhauftible, but to us not inviting, though it muft have been fo to others. It might not be exaggeration, if it appear fo, to fay, that more fpeculation exifts hereon in the languages of India than would fill a volume equal to our whole Cyclopædia! Reference to earlier articles defcriptive of the Yoni and its attributes and allufions enables us to abridge this, which is, however, even combined with what is faid in thofe articles, ftill and neceffarily incomplete. See KAMALAYONI, LILESWARA, LOTOS, MERU, PATRA, RADHA, SAIVA, SAMI, SAMI-DEVI, and SECTS *of Hindoos*. From the article SAMI reference is made to this, and we take this occafion to correct an error in the former: in col. 2, line 24 from bottom, for *fiction* read *friction*.

Individuals, chiefly of the fect called Sakta, meaning worfhippers of the Sakti, or female energy of Mahadeva, the deity of reproduction, propitiate the goddefs under the form of the Yoni, the myftical matrix of nature. Of this, fee under SAKTA and SAKTI. Such individuals have the fectarial appellation of Yonija. In what they differ from the Sakti, if they differ at all, we are not informed. Thefe fects may be fuppofed to comprife but few perfons; but this is a point on which information is obtained with difficulty. Refpectable individuals, if there be any fuch belonging to it, are afhamed to avow being Saktas; and from perfons of a different fort information is not to be relied on.

Writings,

Writings, too, on thefe fubjects, are very obfcure; their endlefs Scholia equally fo, and can be critically underftood by very few Europeans, even with the affiftance of a learned native, who, afhamed probably of what he is defired to explain, will, with almoft laudable delicacy or deceit, glofs over the half-revealed obfcenities of his brethren.

The common tendency in the nature of the adoration of the Linga and of the Yoni might, one would think, have united their worfhippers in a community of object and view. But fuch are the anomalies and perverfities of the human mind, that it appears to be an hiftorical fact, that the Lingajas and Yonijas have actually not only difputed and quarrelled refpecting the comparative merits of their refpective hieroglyphics, or, in other terms, the paramount potentiality of the archetype; but that bloody wars have arifen between them on the queftion, which, as far as now appears, feems really to have been one of phyfiology: the only inftance, probably, in which fuch a queftion hath ever operated as a caufe of holy war, manifold as thofe caufes unhappily have been. The Yonijas infifted, it feems, on a fuperior influence in the *female* over the *male* nature in the production of a perfect offspring. The confequent difputes and warfare the Hindoo writers have, as ufual, recited in extravagant allegories, which we fhould call obfcene, but which they confider as awfully facred.

"This diverfity of opinion," fays Wilford, "feems to have occafioned the general war which is often mentioned in the Puranas (fee PURANA), and was celebrated by the poets of the Weft as the bafis of the Grecian mythology: I mean that between the gods led by Jupiter, and the giants, *or fons of the earth*, or, in other words, between the followers of Ifwara (fee ISWARA) and the Yonijas, or men produced, as they afferted, by Prithu, a form of Vifhnu (fee PRITHU and VISHNU); for Nonnus (Dionyf. b. xxxiv. v. 241.) exprefsly declares, that the war in queftion arofe between the partifans of Jupiter and thofe who acknowledged no other deities than water and earth. According to both Nonnus and the Hindoo mythologifts, it began in India, whence it was fpread over the whole globe, and all mankind appear to have borne a part in it.

"Thefe religious and phyfiological contefts were difguifed in Egypt and India under a veil of the wildeft allegories and emblems. On the banks of the Nile, Ofiris was torn in pieces; and on thofe of the Ganges, the limbs of his confort Ifi, or Sati, (fee OSIRIS, ISIS, ISI, and SATI,) were fcattered over the world, giving names to the places where they fell, and where they are ftill fuperftitioufly worfhipped. In Sanfkrit books, we find the Grecian ftory concerning the wanderings of Bacchus; for Ifwara, having been mutilated through the imprecation of fome offended Munis, (fee MUNI and SAMI-DEVI,) rambled over the whole earth, bewailing his misfortune; while Ifi wandered alfo through the world finging mournful ditties in a ftate of diftraction. There is a legend in another book, of which the figurative meaning is more obvious. When Sati, after the clofe of her exiftence as the daughter of Dakfha, fprang again to life in the character of Parvati, or mountain-born, (fee MERA and MENA,) fhe was re-united in marriage to Mahadeva. This divine pair had once a difpute on the comparative influence of fexes in producing animated beings, and each refolved, by mutual agreement, to create apart a new race of men. The race produced by Mahadeva was very numerous, and devoted themfelves exclufively to the worfhip of the male deity; but their intellects were dull, their bodies feeble, and their complexions of different hues. Parvati had at the fame time created a multitude of human beings, who adored the female power only. Thefe were well-fhaped, with fweet afpects, and fine complexions. A furious conteft enfued between thefe Lingancitas and Yonijas: the former ftood their ground pretty well at firft, but were in the end defeated, and fhamefully routed in the battle, through the potency of the facred Yoni. Mahadeva enraged was about to deftroy them by the fire of his eye: but Parvati interpofed; and to appeafe him, made ufe of the fame artifice that Baubo did to put Ceres into good humour, and fhewed him the prototype of the Lotos. Mahadeva fmiled, and relented on condition that the Yonijas fhould inftantly leave the country.

"It is evident that this ftrange tale was invented to eftablifh the opinion of the Yonijancitas, or votaries of Parvati or the Yoni, that the good fhape, ftrength, and courage of animals depend on the fuperior influence of the female parent, whofe powers are only excited and put into action by the male *aura*. But the Lingancitas maintain an oppofite doctrine. There is alfo a fect of Hindoos, by far the moft numerous of any, who, attempting to reconcile the two fyftems, tells us, in their allegorical ftyle, that Parvati and Mahadeva found their concurrence effential to the perfection of their offspring; and that Vifhnu, at the requeft of the goddefs, effected a reconciliation between them: hence the *navel* of Vifhnu, by which they mean the *os tincæ*, is worfhipped as one and the fame with the facred Yoni." Wilford, in Af. Ref. vol. iii.

YONIJA, the name of a fect of Hindoos, who worfhip the hieroglyphic of Parvati, called *Yoni*; which fee.

YONKERS, in *Geography*, a poft-townfhip of the ftate of New York, in Weft Chefter county, on the E. bank of the Hudfon, above New York ifland, 20 miles N. of New York, extending near eight miles along the Hudfon, and having a medial breadth of near three miles. The furface is broken, but the lands are cultivated and productive. In 1810 the whole population confifted of 1365 perfons, with 93 electors, and 204 taxable inhabitants.

YONNE, a river of France, which rifes about four miles S. from Château-Chinon, in the department of the Nyevre, paffes by or near to Monceaux, Clamecy, Coulanges, Cravant, Auxerre, Joigny, Villeneuve, Sens, Pont fur Yonne, &c. and joins the Seine at Montereau.

YONNE, one of the nine departments of the central region of France, formerly *Yonne*, E. of Loiret, in N. lat. 47° 50′, about 70 miles long, and from 30 to 40 broad, containing 7740 kiliometres, or 373 fquare leagues, and 333,278 inhabitants; bounded on the N.E. by the department of the Aube, and on the S.E. by the department of the Côte d'Or, on the S. by that of the Nyevre, on the W. by that of the Loiret, and on the N.W. by that of the Seine and Marne. The river Yonne, from which it receives its name, croffes it from S.E. to N.W. It is formed of the Auxerrois, formerly reckoned a part of Burgundy. Its capital is Auxerre. It is divided into five circles, or diftricts, 34 cantons, and 484 communes. The circles are, Sens, comprehending 57,285 inhabitants; Joigny, 81,933; Auxerre, 103,882; Tonnerre, 47,394; and Avallon, 42,784. According to Haffenfratz, its extent in French leagues is 29 in length, and 25 in breadth: its circles are 7, its cantons 69, and its population confifts of 364,969 perfons. In the 11th year of the French era, the total of its contributions was 3,093,023 fr.; and its expences, adminiftration, judiciary, and for public inftruction, were 297,935 fr. 66 cents. The foil is various; it has fome dry and indifferently fertile tracts, diverfified with little hills; the weftern part is of a clayey foil, covered with woods and pools:

pools: the cantons to the S. and E. are planted with vineyards; and the northern district is tolerably cultivated. The department, in general, is fertile, producing grain in abundance, with wine, fruits, and excellent pastures.

YOOL ISLANDS, a cluster of small islands in the Pacific ocean, so called by captain Forrest, in the year 1774. In 1788 they were by Mr. Meers called Tattee islands.

YOO-MIOU, a large town of the Birman empire, situated on a small river, which enters the Irawaddy at a place called Yoo-wa. An extensive tract of country is inhabited by a people called Yoo, who are said to be exceedingly ugly, having protuberant bellies, and white teeth. These Yoos are subjects of the Birman state, and observe the same religious worship. They speak the language of Tavay, which is merely a provincial dialect of the Birman tongue. Symes's Embassy to Ava, vol. ii.

YOPA, a town of Mexico, in the province of Culiacan; 100 miles E.N.E. of Culiacan.

YOPAS, LAS, or *Yopez*, a river of Mexico, which rises in Tlascala, and runs into the Pacific ocean, N. lat. 17° 10′.

YO-PING, a town of Corea; 33 miles S.W. of King-ki-tao.—Also, a town of Corea; 28 miles S.S.E. of Tsin.

YORK, the *Eboracum* of the Romans, is the capital of the great county to which it gives name, the see of an archbishop, who is primate and metropolitan of England, and the second city in rank in the kingdom. It is of unquestionable antiquity, and eminently distinguished in English history by the important political, ecclesiastical, and military transactions which have occurred within its walls, or with which it has been in other ways intimately connected. Seated in the midst of a vast plain, by the side of a river which was navigable for the largest ships of ancient times, and too remote from the open sea to be immediately exposed to predatory invasion, York must have early attracted the attention and become the favourite abode of the chiefs of the northern states, and of their successful invaders from foreign lands. Eboracum was accordingly selected by Roman emperors and commanders as a principal residence during their protracted contests with the ungovernable inhabitants of the northern parts of Britain. The metropolis of a shire unparalleled in the kingdom for extent, population, and productions, York is placed at the point of junction, although independent of them all, of the three ridings or districts into which the shire is subdivided. The cathedral is situated in N. lat. 53° 58′, and in W. long. from Greenwich 1° 7′. The city is distant, by the shortest roads, from London, N. by W. 198 miles; from Edinburgh, S.S.E. 201 miles; from Durham, S. by E. 67 miles; from Hull, W.N.W. 38 miles; and from Liverpool, E.N.E. 100 miles. The nearest point of the sea-coast on the E. is at Bridlington bay, distant 33 miles, and on the W. at Lancaster 90 miles. The position of the city is central, with respect to both the limits of the county, and the great body of the population, industry, and commerce, by which it is distinguished. The ancient station of Eboracum was confined between the river Ouse on the W. and the collateral stream, the Foss, on the E., which falls into the Ouse at the southern extremity of the old city. In later times, however, the limits were extended considerably on the opposite sides of both rivers. Such a position, defended on three sides by rivers and marshes, and accessible by an enemy on the N. side alone, although in the midst of a plain, but consequently overlooked by no neighbouring eminence, would, even in the modern art of war, be susceptible of powerful defence: in ancient times it might have been rendered nearly impregnable. In constructing the walls, and laying down the streets, on ground previously occupied by their camps, it was the practice of the Romans to preserve as much as possible the form and distribution of the prior intrenchment. Of this practice frequent instances are found in Britain, as well as in Gaul, and other parts of the continent. The same, notwithstanding the many changes to which the city has been subjected, may still be traced in York, where evident remains of Roman architecture are yet preserved, and where monuments of antiquity of various classes have often been discovered.

In its present state, the plan of York forms an irregular pentagon, extending from S. to N. about 1340 yards, and from W. to E. about 1360 yards: the area within the walls is therefore about 300 acres. It is divided into four wards, which take their names from the four gates. Bootham-gate-ward, in the N.W., contains three parishes; Micklegate-ward, on the W. side of the Ouse, contains six parishes; Monk-ward, in the N.E., five parishes; and Walmgate-ward, on the S.E., seven parishes. But the close of the cathedral is not included in any ward. Some of these parishes extend beyond the walls; and the two churches of St. Lawrence and St. Maurice, situated on the outside of the city, are still commonly reckoned to belong to it. The number of churches, exclusive of the cathedral, is therefore twenty-three. In former times they amounted to forty-five. Although no regular plan can now be traced in the distribution of the streets, yet some of them are of respectable appearance, having of late years been much improved by widening and paving; and new and handsome buildings, public and private, have been erected. The river Foss, long a piece of stagnated water, has again been rendered navigable, and now materially contributes to the ornament of the city as well as to the health of the inhabitants.

York, still inhabited by many genteel families, maintains its importance in no inconsiderable degree; but in point of population and wealth, it has been far excelled by many manufacturing and trading towns in the county, of comparatively modern foundation. According to the reports of the population of the kingdom in 1811, the inhabitants of York were then only 18,217, and the houses 2743.

Civil History.—York, under its romanized name, *Eboracum*, early appears in British history. In the year 208, the emperor Severus, with his sons Caracalla and Geta, visited Britain; and returning from an expedition against the northern insurgents in the following year, Severus resided at Eboracum, while his troops were employed in constructing across the isthmus, between the mouths of the Eden and the Tyne, the great wall of defence still known by his name. In this enterprise, he followed the example and completed the fortification of his predecessor Hadrian, which had been formed in the year 121. While Severus's great work was in progress, the emperor died at York in 210; and his successor Caracalla, more intent on the destruction of his envied brother Geta than on the enlargement or the preservation of the Roman dominion in Britain, soon afterwards returned to the continent. During his residence in York, Severus struck money, on which he styled himself *Britannicus;* and also issued a decree respecting the recovery of slaves, which decree is still preserved in the Roman code, dated at Eboracum, on the 3d of the nones of May, in the consulate of Faustinus and Rufus, corresponding to the year A.D. 209.

Turning his arms against the Caledonians, and other Britons, who struggled for freedom in the north, Constantius fixed his head-quarters in York, and there ended his life in 306. York was also the scene of the inauguration of his son fon and fucceffor Conftantine, who, learning in Afia the indifpofition of his father, haftened to York, where he arrived in time to receive his laft inftructions; and was there proclaimed emperor by the army.

Among the towns fpecified in the geography of Ptolemy, the Itinerary of Antoninus, and the much later work of Richard of Cirencefter, Eboracum is ranked firft as a colony, and afterwards as a municipal town. As a colony, or fettlement of veteran troops, the inhabitants were citizens of Rome, and governed by the laws of the ftate. When advanced to the higheft ftation, that of municipium, the inhabitants retaining the privileges of Roman citizens were no longer under thofe particular laws, but invefted with the power of felf-government, under magiftrates of their own appointment. Befides Eboracum, Britain contained but one other municipal town, Verulamium. In the lift of Roman troops ftationed in York, the fixth legion, called the victorious, appears to have been there for three fucceffive centuries, down to 446, when the Romans finally renounced all dominion in Britain. The Britifh name of York is loft; but although foftened into Eboracum by the Romans, and by their colonies, who copied from them, traces of the original may ftill be perceived in the Kair-Ebrauc of Nennius and Henry of Huntingdon, and in the Cair-Effroc, or Efroc, of the Welfh. In Britifh compound appellations of places, the defcriptive part precedes the proper name: in the language of the Saxons a contrary mode prevailed. Hence Cair-Effroc was by them converted into Efroc-wyc, and Yevor-wyc, from which the prefent name of York feems to be derived.

York was the capital of Deira, one of the diftricts into which the Provincia Maxima of the Romans, or the county of Northumberland, was divided; and there, in the beginning of the feventh century, refided Edwyn, who re-united thofe kingdoms, and acquired the principal afcendency over Saxon-England. To this prince are afcribed the conftruction of the caftle, and the foundation of the city of Edinburgh (Edwyn's burgh), now the capital of Scotland. He alfo founded a cathedral in York; but in 633 he fell in the defence of his dominions, againft the combined attack of the Saxons of Mercia and the Britons of Wales. Under Ofwald, who came to the crown in the following year, Northumberland was again united into one kingdom; and afterwards governed by the celebrated Egbert, who, in 827, out of the Saxon heptarchy, formed the great kingdom of England. After a long feries of difafters from Danifh invafion, and the internal diforders of the kingdom, York was expofed to utter deftruction from the memorable expedition of Harold Hardrad, king of Norway. On the death of Harold of England, an unfuccefsful attempt was made by the people of York to place Edgar Atheling on the throne. For this ftep, William of Normandy befieged the city in 1070, which, after many months, was compelled by famine to furrender. The conqueror inflicted the moft horrible vengeance on the inhabitants, the furrounding country was laid wafte, and caftles were erected within the walls, to keep the conquered citizens in fubjection. With the exception of the contefts between the metropolitans of York and Canterbury, little is recorded of the former city until 1137, when the cathedral church, thirty-nine parifh-churches, and the greater part of the houfes, were accidentally burnt down. About 1160, one of the firft parliaments of England was held there by Henry II.; and in the reign of his fucceffor, Richard I., in 1190, occurred the horrible maffacre of the Jews, which was perpetrated and accompanied with circumftances of peculiar atrocity. In 1299, the courts of juftice were removed from London to York by Edward I. during his expeditions againft Scotland. In his reign this city was claffed among the fea-ports of England, and required to furnifh one fhip for his ufe. In the fanguinary contefts between the houfes of York and Lancafter, the former city naturally efpoufed the caufe of the white rofe; and in 1483, Richard III. was a fecond time crowned in the cathedral. The year 1509 was diftinguifhed by the eftablifhment of a printing-prefs in the minfter-yard of York, near the place where the royal preffes were afterwards erected in 1642, while king Charles refided in the city. Nothing of moment relative to York is afterwards recorded until the 31ft year of Henry VIII., when commiffioners were appointed there to conduct the fuppreffion of the northern monafteries. Adhering to the royal caufe, the city was, in 1644, befieged by the parliamentary forces under fir Thomas Fairfax. But on the approach of prince Rupert, the fiege was raifed; and on the 2d of July, the important battle of Marfton-moor, about five miles off, was fought, in which the royal party was completely defeated. Returning to the fiege, Fairfax, at the end of fix weeks, obtained poffeffion of the city, on moft honourable terms for the garrifon and inhabitants. Notwithftanding the zeal for the royal caufe manifefted by the citizens of York, their charter was fuppreffed by Charles II., and never reftored. A new charter, however, confirming all the former rights of the city, was granted by his fucceffor James II. in 1685. Down to the 30th of July, 1688, the inhabitants of York continued to exprefs the moft determined attachment to James; and on that day, the mayor, aldermen, and commons, congratulated him, in the moft energetic terms, on the birth of a young prince.

Civil Government.—The government of York is vefted in a mayor, who, like the mayors of London and Dublin, and the provoft of Edinburgh, is authorized by the act of Richard II. to affume the title of lord; a recorder, two city-council, twelve aldermen, two fheriffs, feventy-two common-council-men, and fix chamberlains. What is ftyled the privy-council, or the upper houfe, confifts of the lord-mayor, aldermen, and fheriffs, together with thofe citizens who have paffed the office of fheriff. This body, whatever may be its number, is ufually called the twenty-four. The mayor, whofe office ceafes on the 3d of February, is chofen annually from thofe aldermen who have not borne that office twice, nor within the fix preceding years; and during his mayoralty takes precedence of all perfons within his jurifdiction. York was early diftinguifhed among the cities of England: in the Domefday-book it appears to be exempted from the payment of geld, except when the fame is paid by London and Winchefter, and from paying reliefs. In 1396 king Richard appointed two fheriffs, inftead of three bailiffs, for the government of the city, which was then conftituted a county within itfelf. The earlieft charters of York now preferved are, one granted in 1199, and another by Henry III., who died in 1272: but both recite preceding charters of Richard I., Henry I., and Henry II. Reprefentatives in parliament for the city of York appear in the fummons and returns of the 23d of Edward I. For the parliament called to affemble at Shrewfbury, on the 30th of September 1283, which was but the 11th year of Edward, two reprefentatives were fummoned from a number of cities and towns, among which York ftands the fourth in order; thofe before it being London, Winchefter, and Newcaftle-upon-Tyne. Under the jurifdiction of the lord-mayor, aldermen, and fheriffs, befides the city, is a confiderable diftrict on the W. of the river Oufe, called the Ainftey, in ancient writings, Ancitty; but its origin and import are now unknown. This tract was once a hundred or wapentake of the Weft Riding of Yorkfhire; but in the 27th year

year of Henry VI. it was annexed to the jurifdiction of the magiftrates of York, and has ever fince been comprehended in the county of the city of York. The whole diftrict was anciently a foreft, but laid open in the reigns of Richard I. and John: it contains 22 parifhes fubdivided into a number of townfhips; the inhabitants of the whole amounting, in 1811, to 8205 perfons. In all parliamentary affeffments the city is called on for three-fifths of the amount, and the Ainftey for two-fifths. Doubts having long been entertained whether the inhabitants of this diftrict could vote for the reprefentatives of Yorkfhire in parliament, a decifion was obtained in the houfe of commons in 1735, declaring, "that the perfons whofe freeholds lie within that part of the county of the city of York, which is commonly called the Ainftey, have a right to vote for knights of the fhire for the county of York."

Ecclefiaftical Hiftory.—The earlieft notice refpecting the recognifed eftablifhment of Chriftianity in Eboracum, or York, exifts in the lift of bifhops, or paftors, who compofed the fynod or council of Arelate, now Arles, in the fouth of France, about A.D. 314. The bifhops who then appeared on the part of the Britifh church were, Eborius de civitate Eboræcenfi, Reftitutus de civitate Londinenfi, and Adelfius de civitate Colonia Londinenfium. By the retreat of the Romans in the middle of the 5th century, and the fubfequent overwhelming invafions of the Saxons, Chriftianity was almoft entirely fuppreffed in the northern parts of the kingdom. At laft, about 628, Edwin, king of Northumbria, having married Ethelburga, the fifter of Ebald, the converted king of Kent, was, by her perfuafion, aided by Paulinus, who attended her to York, induced alfo to embrace the Chriftian religion. Paulinus was confequently publicly appointed bifhop, or, as fome fay, archbifhop of the renovated church of York. The appointment was confirmed, and the new prelate formally invefted with the enfigns of his office, by pope Honorius. In former times, jealoufies and contefts occafionally took place between the metropolitans of York and Canterbury; to appeafe which it was often neceffary to appeal to the pope. Under the archbifhop of York are placed the bifhops of Durham, Chefter, Carlifle, and the Ifle of Mann; and he is ftyled in general primate and metropolitan of England: but the archbifhop of Canterbury affumes the fame titles over *all* England. At the coronation the latter crowns the king; but the queen has that ceremony performed on her by the archbifhop of York. By the removal of the feat of government to the fouthern parts of the kingdom, and particularly after the Norman Conqueft, the prelates of Canterbury and Winchefter, fituated near the throne, foon acquired an afcendancy over their brothers of York in political favour and power. Among the latter, however, were many men of eminence in the hiftory of the church and of the ftate. Wilfrid, appointed in 669, founded the celebrated monaftery of Ripon. Egbert, the brother of Eadbert, king of Northumberland, was the patron of Alcuin, the enlightened fecretary of Charlemagne. In 930 Wulftan was deprived for aiding Anloff, the Danifh king of Northumberland, againft Edred of England. Aldred, who fucceeded in 1060, was the laft prelate of the Saxon race; for dying in 1070, he was fucceeded by Thomas, a Norman. Gerard, appointed in 1100, as well as his predeceffor, refufed obedience to the fee of Canterbury; but pontifical authority compelled him to fubmit. Obedience was again denied by Thurftan, who had been appointed in 1114; but at laft he retired to a monaftery. In 1153 fucceeded William, afterwards canonized. Roger, fufpected of being privy to the death of Becket, was acquitted on his oath of purgation. In 1190 the fee was filled by Geoffrey Plantagenet, fon of Henry II. and the Fair Rofamond. His fucceffor, Walter de Grey, is faid to have tranfmitted a prodigious fum to Rome for his inftallation: but for this apparent fimony he atoned by purchafing the manor of Thorpe for the country-refidence of the archbifhops of York, and by contributing materially to the erection of the cathedral. While the fee was occupied by John Thorefby, appointed in 1352, in order to remove the contentions between the two archprelates, pope Innocent VI. eftablifhed the diftinction before-mentioned in the metropolitan dignity. Richard Scroope, who fucceeded to the fee in 1398, was, in 1405, beheaded for the active part he took in oppofition to Henry IV. after the murder of Richard II., who, on various occafions, had fhewn a particular favour for York. The fifty-fecond prelate, appointed in 1464, was George Neville, brother of the famous earl of Warwick, and diftinguifhed by the misfortunes of his latter years, no lefs than by the unbounded magnificence of his inftallation. Chriftopher Bainbridge, appointed in 1508, and ambaffador to Rome, was created a cardinal; but was foon after poifoned by an Italian prieft, his fteward. His fucceffor, in 1514, was the celebrated cardinal Wolfey. By the exertions of archbifhop Heath, appointed in 1555, the fee recovered a great part of the revenues it now enjoys, which had been alienated by the arbitrary and avaricious meafures of Henry VIII. As a Roman Catholic, he was deprived of his dignities by Elizabeth, who, however, refpected his merits, and allowed him to retire to his eftate at Cobham. In 1641 the fee was filled by John Williams, who, after warmly efpoufing the royal caufe, openly joined the parliament. After him the fee remained vacant for ten years until 1660, when, on the reftoration of Charles II., it was conferred on archbifhop Frewen. Archbifhop Dolben, who fucceeded Richard Sterne, was an enfign in the army in his youth, and bled in the royal caufe at Marfton-moor: he died in 1688. The laft prelate was Dr. Markham, who had been head-mafter of Weftminfter-fchool, and preceptor to the prince of Wales. Dying in 1808, he was fucceeded by the prefent archbifhop, the honourable Edward Vernon.

Antiquities.—That Eboracum poffeffed temples, palaces, theatres, and the other public edifices with which the politic Romans were in the habit of adorning the principal, and even in fome cafes the minor cities within their dominions, cannot be doubted; but all fuch ftructures have long difappeared. The moft remarkable monument of Roman occupation now to be feen is what is called the multangular tower, being a polygon forming the N.W. angle of the Roman wall, near the N.E. bank of the Oufe. The lower part of this tower is faced with rows of regularly fquared ftones, feparated at broad intervals by layers of flat bricks. The upper part of the tower, pierced with loop-holes, is of much later date. Various Roman infcriptions have been and continue to be difcovered in York: fome are mentioned by Camden, who was the firft to record them. In digging for a cellar, in the beginning of the laft century, in what is called the manor, or the ruins of St. Mary's abbey, on the outfide of Bootham-bar, was found a fmall buft in bronze. In the environs of the city, particularly on the London road, which follows the courfe of the ancient Roman way, fepulchral urns of various kinds have been difcovered. Coins, feals, fibulæ, and many other relics of Roman antiquity, are abundantly found within and around the city. The coins bear the names of all the emperors, from Auguftus to Gratian. In 1807 a fmall vault of Roman conftruction was difcovered, four feet below the furface, on the outfide of Micklegate-bar, containing a ftone coffin, with a human fkeleton entire, a lacrymatory, &c. In 1813 two large ftone

ftone coffins were found without Bootham-bar; and are now preferved in the cathedral. In 1814 was laid open a beautiful teffellated pavement, within Micklegate-bar, but without the Roman town; but unfortunately a part of it only was preferved: this was the firft ever found in York. The walls of the city, which probably fucceeded to the Roman fortifications, and which are now in rapid and difgraceful decay, ftill retain fufficient evidences of their ancient ftrength and importance. When they were erected is now unknown; but their conftruction on the Roman foundations is generally afcribed to Edward I., about 1280: in the time of Henry VIII. they were in complete repair. The oldeft part of the prefent walls appears to be that adjoining to Walmgate-bar, at the S.E. corner of the city, on the road to Hull, where the remains of the Red tower are ftill vifible. During the laft fiege of York, in the civil wars, by fir Thomas Fairfax, in 1644, thefe walls were fo fhattered as to require three years to repair them: but fince that period they have been fhamefully neglected by thofe whofe duty it is to preferve them.

York is diftinguifhed among the cities of England for its ancient gates, or bars, as they are termed. Of thefe, Micklegate-bar, on the S.W. fide of the prefent city, under which is the road from London, is the moft remarkable. It confifts of a lofty fquare embattled tower, with loop-holes, &c. and guarded by an adorned work, with baftion-turrets, &c. Bootham-bar, at the N. entrance of the city, not far from the Roman tower, is almoft wholly conftructed of materials formerly employed in Roman buildings. Monk-bar, on the N.E., and the Walmgate-bar on the S.E., feem to be of equal date, and were probably erected by Edward III. The whole circuit of the ancient walls is nearly two miles and three-quarters.

Caftle: Clifford's Tower.—Nearly at the junction of the Oufe and the Fofs, on an eminence, is the fcite of the ancient caftle, acceffible only from the city on the N., and ftrengthened on the other fides by the Fofs, carried round it in a deep moat. Prior to the Norman Conqueft, York poffeffed a caftle, by fome fuppofed to have ftood on the W. fide of the Oufe. It is, however, much more probable, that the principal fortrefs occupied the pofition here defcribed, on which William of Normandy erected his caftle, which was reftored by Richard III. Ceafing to be regarded as a place of ftrength, it was converted into the prifon for the county of York: but becoming ruinous, the whole was, in 1701, taken down, and the prefent grand ftructures, ftill retaining, although very incongruoufly, the original name, were erected. Within the inclofure of the ancient caftle on the N.W. is a high mount, furrounded by a deep ditch, rifing 90 feet above the river Oufe, and 30 above the fcite of the caftle. On the fummit ftands Clifford's tower, confifting of four fegments of circles joined together, and fo called, it is faid, from the firft governor, after its erection by William the Conqueror, to whofe caftle it ferved as the keep. In the time of Henry VIII. this tower was in a ruinous ftate: but on the commencement of the diforders in the reign of Charles I., it was repaired and fortified by the earl of Cumberland, who mounted fome pieces of artillery on the platform. In the year 1684, the powder-magazine within the tower exploded, and the building was reduced to its external walls, as now exifting. Correfponding to Clifford's tower, on the W. fide of the Oufe, is another mount, called the Old Baile, or *Vetus Ballium;* alfo the fcite of an ancient fortrefs.

Public Buildings.—At the head of the public edifices of York is neceffarily placed the venerable minfter, or cathedral, which, confidered in its totality, is unparalleled in England. The earlieft erection of a *ftone* edifice for the fervice of the Chriftian religion in York is always afcribed to Edwin, king of the Northumbrians. This church was founded about A.D. 628; but it was completed by bifhop Wilfrid, after 669, who covered the roof with lead, and filled the windows with glafs. This laft invaluable fubftance muft have been imported from the continent; for it was not till 674 that glafs-makers were firft introduced into England by Benedict Bifcop, to glaze the windows of his new monaftery at Bifhop-Wearmouth. That the cathedral of York fuffered with the other parts of the city by the ravages of the Danes in 867 is moft probable: but it is not noticed until 1069, when it was deftroyed, with a great part of the city, in a conflagration occafioned by the Norman garrifon, when attacked by the united Danes and Northumbrians. To punifh the refractory people of the city and vicinity, William of Normandy expelled the ecclefiaftics, and feized the revenues of the fee: but thefe were foon reftored, and his chaplain and treafurer, Thomas, a Norman, was promoted to the archbifhopric. By this prelate the cathedral was rebuilt in a magnificent ftyle; but in 1137 it was again deftroyed by fire, together with the abbey of St. Mary, and 39 parifh-churches. Having for a number of years lain in ruins, archbifhop Roger, the ftrenuous opponent of Becket of Canterbury, began in 1171 to rebuild the choir with its crypt, which he lived to finifh. In 1227, his fucceffor, Walter de Grey, erected the tranfept, with the exception of the N. part, which was the work of John le Romaine, the treafurer, who alfo raifed a central fteeple in 1260. In 1291, the fon of the preceding being advanced to the fee, commenced the nave, which, together with the two noble weftern towers, was completed by archbifhop William le Melton. In 1361, the prefent beautiful choir was commenced by archbifhop Thorefby, who contributed largely to defray the charges of the work. More money having been collected than was required, the furplus was, in 1370, employed to conftruct the prefent noble central tower, in the place of one erected by John le Romaine. Thus, in the courfe of 150 years, the cathedral of York was brought into a form nearly as it now appears. It is a grand and interefting edifice; and confifts of a nave with fide aifles, a large and lofty tranfept with aifles, a choir with aifles, and a large fpace eaft of the choir, called the lady-chapel, with aifles. Beneath the altar is a crypt; on the fouth fide are three apartments called veftries and treafury; and at the end of the north tranfept is a fine chapter-houfe, with a correfponding veftibule. The weft end is adorned by two elegantly ornamented towers, whilft another, of larger dimenfions, rifes at the centre of the tranfept. All thefe parts of the church are on a large and magnificent fcale; and though not in an uniform ftyle, yet the nave and choir are of correfponding height and width, and very fimilar in their windows, columns, and other members. The W. front is more richly adorned than any other part of the edifice. Its two towers diminifh in dimenfions as they afcend, and have been ornamented with feveral ftatues, of which now only very few remain. Each tower is furmounted by eight pinnacles; and in the fouth tower is a fet of celebrated bells. In the front are three entrances; that in the centre is divided into two by a pillar. The entire length of the cathedral is above 524 feet; that of the nave, from the weft end to the fcreen at the entrance of the choir, is 250 feet; the length of the choir to the altar-fcreen 150 feet; and that of the lady-chapel, at the eaft end, 65 feet. The tranfept is in length 222 feet. The breadth of the nave, with its fide aifles, is 103 feet; that of the nave itfelf being 63. In the centre of the nave the height to the roof is is 91½ feet; in the tranfept 103 feet; and in the choir 101 feet. The elevation of the central tower or lantern is 213 feet; that of the towers at the W. end 196 feet. The great windows which occupy the principal part of the W. and E. ends of the church are particularly beautiful. The great E. window, efpecially, is of uncommon dimenfions and richnefs. It was executed about 1405, at the expence of the dean and chapter; and the glafs painted, &c. by John Thornton, of Coventry, glazier, who engaged to finifh it in three years, and for which he was paid four fhillings *per* week. Spacious, lofty, and light, the interior of this cathedral has a moft impofing effect. For although the choir be feparated from the body of the building by a fcreen furmounted by the organ, ftill from the W. end the eye ranges over all, quite to the great terminating window in the E. The nave confifts of a double range of eight lofty pointed arches, fupported by flender cluftered columns. A fimilar arrangement prevails in the choir; but the tranfept is of a different age, ftyle, and character, to all the other parts of the church.

Great labour has been beftowed in the carving of the ftalls of the choir, which are of oak. The fcreen behind the altar is ftone, divided into eight pointed arches, the upper parts of which are perforated and glazed. At the entrance of the choir is a very elaborate fcreen of tabernacle work, perhaps of the time of Henry VI. It is covered with niches, canopies, pediments, pinnacles, &c. and contains ftatues of fifteen Englifh monarchs; *i. e.* eight on one fide of the entrance, and feven on the other fide. The whole has been of late years fuitably repaired. The central tower, or lantern, as it is ufually called, is fupported by four lofty arches refting on ftrong maffive cluftered piers.

Among the monuments of prelates and other eminent perfons preferved within the cathedral of York, is diftinguifhed that of archbifhop Walter Grey in the fouth tranfept. It exhibits his effigy in his pontificals, covered by a magnificent canopy, fupported by flender pillars. The whole was enclofed with a handfome railing by the late Dr. Markham. But the moft elegant of all is the monument of archbifhop Bowet, appointed in 1423, of great height, and in the moft florid ftyle of the pointed architecture. A full-length ftatue, with emblems and an infcription, commemorates the late fir George Saville. Attached to the fouth fide of the choir is a range of low buildings, ftyled the veftries; in one of which are preferved fundry emblems of the ancient metropolitan dignity of York cathedral. Among thefe is a famous antique horn, as it is termed, although formed out of an elephant's tooth, by the poffeffion of which the church holds lands of great value, faid to have been granted by Ulphus, a Saxon prince of Deira. In the fame place is preferved the filver paftoral ftaff, prefented by Catharine of Portugal, dowager of Charles II.; to her confeffor, who had been appointed popifh archbifhop by James II. in 1687. Adjoining to the S.W. angle of the tranfept was a fmall building, formerly ufed as a library. A library for the ufe of the ecclefiaftics of the cathedral is believed to have been founded by Egbert the archbifhop in 740, and his fucceffor Albert; but the whole was confumed by fire in 1069. By this misfortune no fmall lofs was fuftained by the lovers of learning; for according to certain writings of Alcuin, the fecretary of Charlemagne, many valuable claffic and other works were contained in it. To fupply in fome meafure its place, another library was collected by archbifhop Thomas, the Norman; but that alfo was deftroyed by the flames in 1137. From this period, the cathedral is not known to have been furnifhed with many books until the private collection, confifting of upwards of 3000 volumes, of archbifhop Matthew, was beftowed on it by his relict in the beginning of the 17th century. By various fubfequent bequefts, prefents, and purchafes, a large collection of valuable books and manufcripts has been formed, and placed in what was formerly the chapel of the archiepifcopal palace, on the north fide of the cathedral. This building has been lately repaired in a ftyle fuitable to that of the church, and commodioufly adapted to its prefent deftination. Connected by a fhort paffage or veftibule with the N.E. angle of the tranfept of the cathedral is the chapter-houfe, an octagon room, 63 feet in diameter, and nearly 68 in height. This building differs from many others of the fame kind, in having no central pillar to fupport the roof: but the preffure of the arched roof upon the walls is effectually counteracted by buttreffes at each external angle. From the fimilarity of the ftyle of building with that of the nave of the cathedral, founded in 1291, the chapter-houfe is fuppofed to have been erected about that time. The buildings belonging to the cathedral were formerly feparated from the city by walls; and fome remains of the gates of communication may ftill be difcovered. Of thofe buildings, the principal was the archiepifcopal palace, fituated on the north of the church. It was erected by the firft Norman prelate appointed in 1070; but after a lapfe of about 500 years, the great hall was taken down by the Proteftant archbifhop Young, for the fake, it is faid, of the lead on the roof. Since that time other parts of the palace have been leafed out. In former times to the fee of York belonged various places of refidence; but now that of Bifhopthorpe alone is occupied. This is agreeably fituated on the fide of the river Oufe, about three miles fouth-weft from the city. It was purchafed and appropriated to the fee by archbifhop Walter de Grey, in the early part of the 13th century; fince whofe time it has undergone many important alterations and improvements. The principal front and the veftibule are in the pointed ftyle of architecture, and in the interior are feveral fpacious and elegant apartments, befides the chapel and library. In the minfter-yard ftill remains the refidence of the dean of the cathedral, a fpacious and convenient edifice of refpectable appearance.

Of the parifh-churches in York, that of St. Margaret in the fouth-eaft quarter of the city is remarkable for the porch attached to it, but which is of much higher antiquity than any other part of the edifice. It was removed from the church of St. Nicholas, formerly fituated without Walmgate-bar, but ruined during the fiege of York in 1644. The arch of the porch is femicircular, and exhibits alternately the figns of the zodiac and the emblems of the months. The churches of St. Denys and St. Lawrence have alfo an appearance of confiderable antiquity. Next to the cathedral, the church of St. Michael-le-Belfrey is the largeft and the moft regular in the city, fupported by light pillars and pointed arches. The prefent building was erected on the removal of the former in 1535. The church of All Saints, on the pavement, is diftinguifhed by its open octangular turret, erected on a fquare tower, in which, according to tradition, a large lamp was fufpended in the night, to guide travellers over the broad foreft of Galtres, which extended on the north and eaft of the city. York contains places of meeting for various claffes of diffenters from the eftablifhed church; that for the Society of Friends, lately erected, is large and commodious. A handfome chapel for the ufe of the Roman Catholics was built in 1782.

Of the numerous religious eftablifhments formerly exifting in and near York many veftiges ftill remain. Of thefe,

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the principal was St. Mary's abbey, fituated on the bank of the river Oufe, on the outfide of the city wall. The foundation of the monaftery is of uncertain date; but the church, of which fome confiderable ruins ftill remain, was rebuilt in 1270. Having fallen to decay after the general fuppreffion of religious houfes, Henry VIII. ordered a palace to be erected out of the ruins, for the refidence of the lord-prefident of the north of England, to be defignated the 'king's manor.' This was enlarged by James I. Previoufly to the Revolution it became an object of popular outrage: but fome years afterwards the king's Mint was eftablifhed in it, and much gold and filver, diftinguifhed by the initial letter Y, was ftruck there for William III. The fcite of the abbey and the manor have long been leafed from the crown by lord Grantham and his predeceffors. Connected with the religious fyftem of former times, it may be noticed, that adjoining to the walls of York, immediately without Micklegate-bar on the London road, is an eftablifhment called the Nunnery. The building was originally acquired in 1686, as a place of education and living for young ladies of Roman Catholic families. The eftablifhment at prefent confifts of the fuperior and twenty affiftants, who wear the drefs and conform to the regulations of nuns in Catholic countries, with twelve lay-fifters, and a chaplain. From fixty to feventy boarders are ufually accommodated in the inftitution.

The Guild-hall and the Manfion-houfe are fituated near the river Oufe, in the north-weft quarter of the city. The hall, built in 1446, is a noble room, ninety-fix feet long, forty-five broad, and twenty-nine feet fix inches high. In it are held the law-courts and the courts of municipal juftice. The Manfion-houfe was erected in 1725, and contains every neceffary accommodation for the lord-mayor. In the fame quarter of the city are the affembly-rooms, the theatre, the fubfcription library, the principal hotels, &c. As a fortrefs, York caftle has long ceafed to be of importance: it is now occupied by feveral ftructures. That on the W. fide of the area is the county-hall, rebuilt in 1777, in which the affizes are held, and other county bufinefs is tranfacted. The centre building is the prifon for debtors and criminals: the third building on the E. contains the record-office, and various apartments neceffary for the tranfaction of the bufinefs of the county. Of all thefe buildings it is but juftice to fay, that in their conftruction external elegance and tafte have been properly combined with a due attention to their feveral deftinations. The arrangement and management of the prifons have been frequently the fubject of commendation. The new city-gaol, an extenfive ftone ftructure near the Old Baile, on the weft fide of the river Oufe, and the houfe of correction, are alfo deferving of attention.

The charitable eftablifhments for the poor and the fick in York are very numerous, and well conducted. Among thefe, the county-hofpital and the city-difpenfary are highly commendable. Schools for the education of youth of both fexes are not wanting in York. In 1647 a petition was prefented to the crown from the inhabitants of the city and the county, and from other parts of the north, for the eftablifhment of an univerfity in York: but the unfettled ftate of the affairs of the kingdom then prevented due confideration of the requeft; nor has it fince been renewed; although, for various important reafons, York feems peculiarly adapted for a place of literary and fcientific retirement and ftudy. A feminary or college for the education of minifters and lay-gentlemen among Proteftant diffenters, which formerly fubfifted at Manchefter under the fucceffive care of the Rev. Dr. Barnes and Mr. Walker, and was liberally fupported by voluntary fubfcription, was on the death of the latter profeffor removed to York, where it is conducted with great reputation by the Rev. Meffrs. Wellbeloved, Kenrick, and Turner.

Bridge.—Communication between the original city of York, and the fuburb ftyled Micklegate-bar on the fouth-weft fide of the river Oufe, is maintained by a handfome ftone bridge, which has lately been erected from the defigns and under the direction of Peter Atkinfon, efq. of York. In 1154 the bridge was wood: but in 1268 it was probably of ftone; for then was founded on it St. William's chapel, in atonement for the death of feveral perfons on the fpot in a fray with the people of the town. In 1564 a flood following an intenfe froft fwept away two arches of the bridge, with the houfes built on them.

On the fouth-eaft fide of York, going out by Walmgate-bar, near the village of Heflington, is an eftablifhment for the reception and relief of perfons difordered in mind; which has, for fome time, been the fubject of general approbation. This was called the Retreat, founded by the refpectable Society of Friends, and originally intended for members of their clafs alone. The firft idea of this admirable inftitution was fuggefted in 1791, by the unfortunate death of one of their fociety, at a common receptacle for the infane. In 1794 land was purchafed, and the building commenced, on a commanding eminence. The general arrangement, management, and fyftem of treatment of the unfortunate patients, have been imitated, as the moft perfect of their kind, in various parts of the kingdom and America. See an "Account of the Retreat," 8vo.—Eboracum, or Hiftory and Antiquities of York, by Francis Drake, F.R.S. folio, 1736. Defcription and Hiftory of the City and Cathedral of York, 12mo. 3d ed. 1790. Defcription of York, 12mo. 1816. A Guide to the Cathedral of York, 12mo. 1815, is a rational and judicious vade mecum.

YORK, *Cuftom of.* See RATIONABILI *parte bonorum.*

YORK, in *Geography*, a county of the United States, in the diftrict of Maine, containing 23 towns, and 41,877 inhabitants.

YORK, a diftrict of South Carolina, containing 10,032 inhabitants, including 3164 flaves.

YORK, a county of Pennfylvania, fouth-weft of Sufquehanna. It contains 22 townfhips, and 31,958 inhabitants.

YORK *Borough*, a town of Pennfylvania, in York county, containing 2847 inhabitants.

YORK, a townfhip of Pennfylvania, in York county, containing 1649 inhabitants.

YORK, a county of Virginia, with 5187 inhabitants, including 2931 flaves.

YORK, a town of United America, in the diftrict of Maine, and county of York, containing 3046 inhabitants; 50 miles N.N.E. of Bofton. N. lat. 43° 7′. W. long. 70° 40′.

YORK, a townfhip of Ohio, in the county of Belmont, containing 1349 inhabitants.

YORK, the capital of Upper Canada, fituated on the lake Ontario. It is likely to become a city of great importance, as it poffeffes great facilities for commerce and navigation. It lies in about 43° 35′ N. lat., within an excellent harbour of the fame name, made by a long peninfula, which embraces a bafon of water fufficiently large for containing a confiderable fleet. Veffels may ride fafely at its entrance during the winter. On the extremity of the peninfula, which is called Gibraltar Point, are erected commodious block-houfes and ftores commanding the entrance into the harbour. On the main land oppofite poſite to the Point is the garriſon, ſituated on a point made by the harbour and a ſmall rivulet, which being improved by ſluices, affords an eaſy acceſs for boats to go up to the ſtores. The barracks being built upon a knoll are well ſituated for health, and command a delightful proſpect of the lake to the weſt, and the harbour to the eaſt. The government-houſe has a ſtriking appearance from the lake, and is well calculated for the reſidence of a governor. Its ſituation is commanding, about two miles above the garriſon, being the head of the harbour. The town is increaſing; the ſociety of the place is reſpectable. The public buildings are deſigned for the legiſlative council, houſe of aſſembly, and courts of law. The gaol is in a healthy ſituation. The town is furniſhed with every convenience, and the market is well ſupplied with good beef, mutton, veniſon, fiſh, &c. The wheat ſupply is from Montreal: the land around York is in general ſandy; but bears good crops of every deſcription. The plan of the town is one mile and a half in length: the ſtreets are tolerably uniform; and the river Don empties itſelf into the harbour, a little above the town, running through a marſh, which, when drained, will afford excellent meadows. The country round this place is capable of great improvement, and renders it fit for a ſeat of government. See Boulton's Sketch of Upper Canada, ch. viii.

YORK, a river of Virginia, formed by the union of the North Anna and South Anna, which runs into the Cheſapeak, near its mouth.—Alſo, a river of America, in the diſtrict of Maine, which runs into the ſea, a little below York.

YORK *Bay*, a bay on the ſouth-weſt coaſt of the iſland of St. Vincent; 2 miles N.W. of Kingſtown bay.—Alſo, a bay formed by the union of the Eaſt and Hudſon's rivers below New York. It communicates with the ſea by a channel, called the Narrows.

YORK *Fort*, a fortreſs at the mouth of Nelſon's river, in Hudſon's bay. N. lat. 57° 2′. W. long. 92° 46′.

YORK *Iſland*, a ſmall iſland, near the eaſt coaſt of the iſland of Antigua; about half a mile N.N.E. of Frier's Head.—Alſo, one of the Gallapagos iſlands, in the Pacific ocean.

YORK *Iſlands*, three ſmall iſlands, in the South Pacific ocean, near York Cape, on the north coaſt of New Holland.

YORK *Minſter*, a lofty promontory on the coaſt of Terra del Fuego, ſo called by captain Cook in 1774. It forms the north-weſt point of entrance into Chriſtmas ſound. S. lat. 55° 26′. W. long. 70° 25′.

YORK *Point*, a cape in the ſtraits of Magellan. N. lat. 53° 39′. W. long. 73° 32′.

YORK *River*, a river of America, in the province of Maine, which runs into the Atlantic, N. lat. 43° 7′. W. long. 70° 40′.

YORK *Road*, a road for ſhips in the ſtraits of Magellan, near the coaſt of Patagonia. The only danger of ſailing into the bay, that is formed by two points in this road, ariſes from a reef that runs off to about a cable's length from the weſtern point, which once known may be eaſily avoided. To anchor in this bay, it is ſafeſt to bring York Point E.S.E.; Bachelor's river N. by W. half W.; the weſt point of the bay or reef N.W. half W.; and St. Jerom's ſound W.N.W. at the diſtance of half a mile from the ſhore. There is good watering about a mile up Bachelor's river, and good wooding all round the bay, where the landing alſo is, in all parts, very good. There is plenty of celery, cranberries, muſcles, and limpets, many wild-fowl, and ſome fiſh, but not enough to ſupply a ſhip's company with a freſh meal. S. lat. 53° 39′. W. long. 73° 52′.

YORK, *New*, one of the United States of America, ſituated, according to the ſtatement of Meliſh, between 40° 33′ and 45° N. lat., and 3° 43′ E. and 2° 43′ W. long. from Waſhington; extending from N. to S. 198 miles, and from E. to W. 256; and comprehending an area of 46,000 ſquare miles, or 28,440,000 acres. This ſtate is bounded on the N. by lake Ontario and Canada; on the S. by Pennſylvania, New Jerſey, and the Atlantic ocean; on the E. by Vermont, Maſſachuſetts, and Connecticut; and on the W. by Upper Canada, lake Erie, Pennſylvania, and New Jerſey. This territory, according to Spafford's "Gazetteer of New York," compriſes an area of 46,085½ ſquare miles, equal to 29,494,720 acres; but this computation includes all the inland rivers and lakes, one half of lake Champlain, and the St. Lawrence; excluding only all the waters below New York iſland, and that part of the lakes Ontario and Erie which belong to this ſtate. This ſtatement gives 20.8 perſons to a ſquare mile. New York is at preſent divided into 45 counties, and 452 townſhips, including four incorporated cities; *viz.* New York, Albany, Hudſon, and Schenectady, as exhibited in the following

Topographical Table.

Counties.	Townſhips.	Population.	Chief Towns.	
Albany	8	34,661	Albany	9,356
Alleghany	5	1,942	Angelica tp.	439
Broome	6	8,130	Chenango tp.	225
Cattaraugus*	1		Olean tp.	458
Cayuga	10	29,843	Auburn tp.	500
Chatauque*	2		Chatauque tp.	1,039
Chenango	14	21,704	Norwich	225
Clinton	5	8,002	Plattſburg tp.	3,112
Columbia	11	32,390	Hudſon	4,048
Cortlandt	6	8,869	Homer	350
Delaware	14	20,303	Delhi tp.	2,396
Ducheſs	16	51,363	Poughkeepſie	1,800
Eſſex	11	9,477	Elizabethtown tp.	1,362
Franklin	4	2,617	Ezraville	767
Geneſee	10	12,588	Batavia	200
Greene	7	19,536	Catſkill	1,000
Herkimer	10	22,046	Herkimer tp.	475
Jefferſon	12	15,140	Watertown	250
King's	6	8,303	Flatbuſh tp.	1,159
Lewis	7	6,433	Martinſburg	150
Madiſon	11	25,144	Cazenovia	500
Montgomery	15	41,214	Johnſtown	605
New York	1	96,373	New York	96,373
Niagara	4	8,971	Buffalo	500
Putnam.*				
Oneida	26	33,792	Utica	1,500
Onondaga	13	25,987	Onondaga	525
Ontario	24	42,032	Canandaigua	685
Orange	11	34,374	Newburgh	2,000
Otſego	21	38,802	Otſego	550
Queen's	6	19,336	Northempſtead tp.	2,750
Renſſellaer	13	36,309	Troy	2,640
Richmond	4	5,347	Richmond	100
Rockland	4	7,758	Clarkſtown tp.	1,996
Saratoga	14	33,147	Saratoga	
Schenectady	4	10,201	Schenectady	2,000
Schoharie	8	18,945	Schoharie	125
Seneca	7	16,609	Ovid tp.	4,535
Steuben	9	7,246	Bath	250
St. Lawrence	12	7,885	Ogdenſburg	350
Carry up	372	822,792		

Suffolk

Counties	Townſhips.	Population.	Chief Towns.	
Brought up	372	822,792		
Suffolk	9	21,113	Riverhead tp.	1,711
Sullivan	7	6,108	Thomſon tp.	1,300
Tioga	9	7,899	Spencer tp.	3,128
Ulſter	13	26,576	Kingſton	750
Warren.*				
Waſhington	21	44,289	Salem	280
Weſt Cheſter	21	30,272	Bedford tp.	2,374
	452	959,049		

* Laid out ſince the cenſus was taken.

Putnam county was erected in June 1812, from the S. end of Ducheſs county, and is formed of the towns of Philips or Philipſtown, Carmel, Frederick, Patterſon, and South-Eaſt. Courts are held in the Baptiſt meeting-houſe in the town of Carmel, and this county ſends one member to the houſe of aſſembly. The towns are, Carmel the chief, including, in 1810, 2020 inhabitants, the electors being 153; Frederick, with 1811 inhabitants, and 98 electors; Patterſon, with a population of 1446, and 110 electors; Philips, with 3129 perſons, and 165 electors; and South-Eaſt, in which the population is 1887, and the number of electors 161.

Warren county was erected from the N.W. extremity of Waſhington, March 12, 1813. It compriſes the towns of Bolton, Caldwell, Cheſter, Hague, Johnſburgh, Luzerne, Queenſbury, and Thurman, the laſt of which is divided into two towns, called Athol and Warrenburgh. The chief town is Caldwell, with a population of 560 perſons, and 60 electors; Athol has 443 inhabitants, and its electors are 20; Bolton has 726, and 30 electors; Cheſter 937, and 120 electors; Hague 398, and 21 electors; Johnſburgh 651, and 82 electors; Luzerne 1015, and 85 electors; Queenſbury 1948, and 197 electors; and Warrenburgh 887, with 41 electors.

The face of this ſtate exhibits a great variety. To the S.E. its ſurface is agreeably uneven; in the middle, mountainous; to the N.W. undulating; flat towards the lakes; and hilly towards the ſouthern extremity.

Of the *mountains* in this ſtate, the chain called Katſkill, or Catſkill, is the largeſt and moſt extenſive, and this preſents a bifurcation of the Apallachian ridge, which at the Highlands occupy a tract of about 16 miles in width, lying obliquely acroſs the Hudſon, and penetrated by that river. Theſe ridges preſerving their general direction ſtretch acroſs Ducheſs county, the eaſtern parts of Columbia and Renſſelaer counties, and exhibit ſome lofty ſummits. The Tauconick mountains are lofty and very rugged, and Hooſack and Williamſtown are mountains which deſerve the appellation. But the Catſberg or Catſkill mountains preſent ſome ſummits that are higher than any others of the Apallachian chain, if we except the White-hills in New Hampſhire. At the Highlands, the ſummit of Butter-hill is 1432 feet above the level of the river; that called the Crow's-neſt 1330; Bell-hill 1391. About 60 miles N., the Round-top is elevated 3655 feet above the level of the river; the High-peak 3487. Theſe ſummits are in Windham, Greene county, about 20 miles W. of Hudſon, and in full view from that city. A turnpike-road which croſſes this range of mountains near thoſe ſummits, winds up till it reaches the aſtoniſhing altitude of 2274 feet. Upon this ſpot the view is inexpreſſibly grand. The general altitude of the Catſkill mountains may be eſtimated at about 2000 to 3000 feet acroſs Greene county. From Greene they paſs into Schoharie county with ridges leſs rugged; and towards the ſouthern part, their continuity is leſs diſtinctly defined. Until after forming the falls of the Mohawk, this range traverſes Herkimer county, forming a rugged tract, and diminiſhing in altitude till they croſs the St. Lawrence into Canada, at the Thouſand iſlands. Theſe mountains have obtained from the early Dutch inhabitants the name of Helderberg, or clear mountain, preſenting, inſtead of lofty ſummits of granitic and ſchiſtic mountains, an elevated plain of conſiderable and very uniform altitudes. Around lake George, and to the W. of lake Champlain, we find the Peruvian mountains, which furniſh the northern ſources of the Hudſon, and form the height of land that ſeparates the waters of the Hudſon and St. Lawrence. The higheſt of theſe is probably that called White-face, which commands a view of Montreal, at the diſtance of near 80 miles. The altitude of this ſummit is little ſhort of 3000 feet from the level of lake Champlain. Theſe mountains obtained the name of Peru from the French inhabitants, in alluſion to their ſuppoſed mineral treaſures. With ſome few exceptions, the whole country S. of the Highlands is underlaid by rocks of granite, with ſuperſtrata of other rocks, which appear in the elevated tracts. There are ſome tracts of lime-ſtone and ſome of ſand-ſtone, but theſe are ſo inconſiderable in extent as to furniſh no objection againſt denominating this the granitic region. Some ranges of hills on the W. of the Hudſon, compoſed of ſand-ſtone, are underlaid by granite; and the Catſkill mountains are a maſs of ſand-ſtone, ſimilar to the Alleghany mountains in Pennſylvania, intermixed with lime; the Helderberg, with ſome particles of ſand-ſtone, occaſionally interſperſed. N. and E. of the Highlands the rocks are chiefly ſchiſtic that form the ſubſtratum, while calcareous ridges of great extent occupy the ſurface. The hills on the eaſtern border of Columbia and Renſſellaer counties are formed chiefly of fragile ſchiſtus, intermixed with quartz, and occaſional ſuperſtrata of lime-ſtone. On the eaſtern declivities of theſe hills limeſtone predominates, forming the marble quarries of Stockbridge, Laneſborough, &c. in Maſſachuſetts. The northweſtern continuation of the Catſberg or Catſkill preſents a kind of calcareous granite, in which the abſence of the felſpar is ſupplied by primitive lime-ſtone. The Peruvian mountains are principally granitic, though ridges of limeſtone, ſlate, flint, and ſand-ſtone, appear in conglomerate maſſes, and theſe are moſt abundant in mineral treaſures. The whole level county of the ſmall weſtern lakes is calcareous. The Tauconick hills that border the ſouth-eaſtern part of Columbia county are granitic.

The *rivers* of this ſtate are numerous and extenſive; and ſo are its *lakes* and *creeks*. The Hudſon and the Mohawk are the moſt conſiderable rivers, to which we may add the Sacandaga, a branch of the Hudſon and Scroon rivers, connected with Scroon and Brant lakes. The creeks of the Hudſon and Mohawk are numerous. The Suſquehanna riſes in this ſtate; and its weſtern branch, the Tioga, is a river of ſome note, and claims diſtinction from ſeveral creeks belonging to the former river. The Delaware, which receives ſeveral rivers and creeks, forms a part of the weſtern boundary of New York; and the Alleghany, a principal branch of the Ohio, has its origin in this ſtate, and its creeks, large and ſmall, are too numerous for our recital. The Chatauqua lake diſcharges itſelf into Connewongo creek. The Cataraugus and Buffalo creeks run into lake Erie; Tonewanda and Ellicott's creeks into Niagara river, forming a part of the weſtern boundary of the ſtate. Lake Ontario, half of which is in this ſtate, receives the Geneſee, the Oſwego, and Black rivers, which convey into this lake the

the waters of feveral other rivers and creeks. The St. Lawrence wafhes more than 100 miles of the north-weftern boundary, and it receives a number of rivers and creeks. Half of lake Champlain alfo belongs to this ftate, and it is fupplied by feveral ftreams. Eaft river alfo belongs to this ftate.

The *climate* and *feafons* muft in fuch an extent of country be very various, fo that it is difficult to accommodate any general obfervation to the whole ftate. In the eaftern territory, or wholly S. of the Highlands, where the prevailing winds are foutherly through the warm feafons, the weather is very variable; and the changes of temperature, governed by the winds, frequent and fudden. In the northern part of the ftate, the weather is lefs variable; but the winters are long and fevere, with a clear and fettled fky. This region, extending from the fouthern extremity of lake George, and weftward to near lake Ontario and the St. Lawrence, may be diftinguifhed as the region of the "northern climate." That of the "weftern climate" comprifes the great weftern territory of this ftate, extending from the Catfberg or Catfkill mountains to the great lake. Here fouth-wefterly winds prevail in a confiderable proportion throughout the year. A gentle current of air, that may be traced from the gulf of Mexico, and reaching to a diftance of more than 1000 miles, prevails almoft conftantly from the S.W.; and northerly and eafterly winds are almoft wholly unknown. In this diftrict, the average temperatures are about three degrees higher than in fimilar latitudes in the eaftern climate. Such is the general character of the weftern climate of the United States, and the diftinction is faid to terminate, or nearly fo, with the region about lake Ontario. The weftern climate of this ftate is therefore warmer than the eaftern by about 3° of Fahrenheit; and this is attributed to the greater prevalence of warmer currents of air from the S.W. In the region about Albany, the rigours of winter commence about the 20th of December, and end with February, or about the 10th of March, when the ice ufually breaks up in the Hudfon. From the middle of March to the end of April, the weather is very variable; the changes of temperature great and fudden, though it be generally rainy, with long-continued ftorms of eafterly winds. May is alfo a variable month; June affumes a fummer character; in July, foutherly winds are diminifhed, and drought prevails; Auguft is more fhowery, and more uniformly temperate, than any month of the year, and affording health and plenty. The former part of September refembles Auguft, and terminating with mild and pleafant weather. October is an agreeable month; early frofts occur about the 26th of September, though corn ripens till the middle of October; and from the 15th to the 25th of this month the foliage of the foreft-trees is deftroyed, and early falls of fnow commence about this time. December is ufually cold and fhowery, and ftorms from the N. and E. are frequent, and of long continuance. It is obferved, that a general modification of temperature, favourable to agricultural interefts, has occurred within the laft 10 or 15 years.

This ftate affords facilities for *inland navigation* fuperior to any other, combining both the objects and the means of intercourfe. The connections of the rivers Hudfon, Mohawk, Ofwego, Delaware, Ohio, Sufquehanna, Alleghany, Miffiffippi, and St. Lawrence, by creeks and ftreams, and canals with the lakes Oneida, Erie, George, Champlain, Ontario, &c. are peculiarly favourable to internal navigation and commerce. The canal at Rome, which connects the waters of the Mohawk and lake Ontario, and which was completed in 1797, deferves particular mention; and it fhould be noticed to the honour of this ftate, that the weftern inland lock navigation company is formed for the direct purpofe of improving the navigation of the weftern waters; and that the project of a great weftern canal for connecting lake Erie and the Hudfon by a boat navigation is a very important object.

The ftate of New York has few *bays*, exclufively of thofe of Long ifland, which are very numerous. It has many iflands, among which Naffau, or Long ifland, claims the firft place, as it affords more than 100 miles of fea-coaft, many excellent harbours, and many advantages for commerce. Its bays are both numerous and large, and it has immediately dependent upon it many fubordinate iflands. The iflands in the bay of New York, as well as that upon which New York itfelf is fituated, and Staten ifland, and thofe belonging to the Hudfon, Mohawk, Niagara, and St. Lawrence rivers, to lake Ontario, Champlain, George, &c. might be enumerated if our limits would allow. In this connection we might alfo mention a variety of bridges that ferve to facilitate communication and intercourfe between the various parts of this ftate.

The *foil* and *agriculture* of New York deferve our particular attention. The foil is of various characters in different parts of the ftate. In fome diftricts it is deep and warm, and well adapted to grain or grafs; in other parts it is of a loofer texture, and is found in various proportions by the admixture of vegetable remains; forming a thick vegetable mould, with a fmall proportion of earth, and called by the farmers in that country "black muck." This is foon exhaufted, and as it refts on a fubftratum, called "hard-pan" by the farmers, that is cold and ftony, it is incapable of being reftored or reclaimed by any manure or art of hufbandry. The weft end of Long ifland is rich, fertile, and highly cultivated; but the eaftern part has a large proportion of fandy barren plains. Below the Highlands, the foil is principally dry and warm, having a gravelly or fandy fubftratum, or granitic rock. North of the Highlands to the Mohawk, the foil is dry and warm, being either a gravelly or fandy loam in general; and both thofe which we have mentioned are ftated to be a medium foil. But on the eaftern border of the ftate, the rocks are principally fchiftic, and a fchiftic gravel forms moft of the foil, which is warm and productive, though not deep. The alluvial flats of Columbia and fome part of Renffelaer counties are very extenfive and rich; and the valleys, prefenting a warm gravelly foil, are alfo extenfive, and furnifh much good medium foil. Weft of Albany are extenfive fandy plains, interfperfed with marfhes, and rather cold and wet till we approach the Helderberg hills. This plain is generally underlaid by clay; but the Helderberg hills are calcareous, and prefent a better foil, though broken and much diverfified.

The agricultural products of this divifion of the whole territory of the ftate confifts of all the various productions of this country. The weft part of Long ifland, and the counties of Weft Chefter and Duchefs, are well cultivated. The latter is one of the beft farming counties in the ftate. The introduction of gypfum as a manure has marked a new era in the agriculture and rural economy of this region. The weft fide of the Hudfon is confiderably behind the eaftern. The fouthern part of Wafhington county has a warm gravelly medium foil, and abundant crops. Saratoga has much good but more wafte land. Its general character is more fandy; and, like that of Albany, refts on clay. Around lake Champlain there is a large extent of clayey foil, extending to the hills that fkirt the Peru mountains. With the exception of the alluvial flats, which are extenfive and rich, the foil of the country of the Mohawk may be generally

generally denominated a ſtiff loam, till we go weſt of the Catſkill hills at the Little Falls. Here it aſſumes a new character. The ſoil of the mountainous tract of the weſtern region is much diverſified: the hills are rocky; the valleys deep and narrow, or ſpacious and rich. This tract furniſhes conſiderable black muck, or deep vegetable mould, in the valleys. A very large proportion of the ſoil of this country may be denominated a rich mould, variouſly intermixed with earth of different kinds; and much of the ſoil is well adapted for grain and graſs. No part of the ſtate is more rapidly advancing in agricultural improvements than this weſtern region. The ſoil of the level country eaſt of lake Ontario, and along the St. Lawrence, is a warm ſandy loam, with a large proportion of the firſt rate of medium for agriculture.

The rotation of crops lately introduced into this country marks a new era in its agriculture. We ſhall cloſe this detail with remarking, that the exertions of the agricultural ſociety of this ſtate have been very beneficial, though its publications need more general circulation.

The *botanical productions* of this ſtate are numerous and various. Its foreſt-trees are luxuriant. The region of the weſtern climate is principally wooded with deciduous trees, and of the loftieſt growth. Thoſe of the eaſtern or Atlantic climate are generally deciduous, but leſs lofty. The moſt common foreſt-trees are, oak, maple, beech, walnut, butternut, cheſnut, birch, tilia or baſs-wood, poplar, cherry, ſycamore or button-wood, aſh, elm, ſaſſafras, hornbeam, ſumach, elder, pine, ſpruce, larch, fir, hemlock, cedar, and in ſome parts, locuſt laurel, mulberry, black-walnut, cucumber-tree, crab-apple, and common thorn, of many varieties. The ſtate of New York is eſſentially agricultural. Wheat is the firſt object of the farmers; and they alſo cultivate rye, maize, oats, flax, hemp, peas, beans, &c. and moſt of the domeſtic graſſes are cultivated with ſucceſs. Fruits are abundant and various; ſuch as apples, affording cyder of the beſt quality, peaches, pears, plums, cherries, &c. The garden-fruits are as various as thoſe of any ſtate in the Union.

The *domeſtic zoology* of the ſtate preſents the horſe, the cow kind, the merino and other kinds of ſheep, which furniſh good wool, and ſwine. The wild animals, not to mention the mammoth, the mooſe, and the biſon, now extinct in this ſtate, are, the deer, bear, wolf, and fox; and more rarely, the otter, the wolverene, the wild-cat, racoon, martin, the weaſel, hare and rabbit, ſquirrel and mouſe, &c. The lakes and rivers ſupply abundance of fiſh, ſuch as the ſalmon-trout, trout, ſturgeon, chad, herring, pike, and many others. The oyſters are in high repute. The number of birds ſtationary and migrating is very great. Serpents are found in ſmall numbers, and the rattle-ſnake does not frequently occur; other ſnakes are numerous. It is needleſs to mention the inſects, of which the number and variety are conſiderable.

The *mineralogy* comprehends iron-ore, ſalt, gypſum, limeſtone, marble, ſlate, native brimſtone, coal, ores of lead, copper, zinc, tin, aſbeſtos, mill-ſtones, marle and peat, clays, alum, ſwine-ſtone, &c. Calcareous petrifactions are very common in the calcareous regions. Siliceous ſand for the manufacture of glaſs, plumbago, a variety of ochres, mica, iſinglaſs, magneſian ſtones, amianthus, black flints for muſkets, molybdena, iron and copper pyrites, emery, magnetic ores of iron, ores of zinc, ores containing ſilver and antimony, and rock cryſtals, are ſeverally found in various parts of this ſtate. Its mineral waters are held in high eſtimation.

The *conſtitution* of this ſtate was adopted by a convention of delegates April 20, 1777, and reviſed in 1801; and its character is republican. The conſtitution of the United States was acceded to in this ſtate in 1788. The ſupreme executive power is veſted in a governor and lieutenant-governor, elected every three years by free-holders poſſeſſing a clear eſtate of 250 dollars; as are the ſenators alſo. The ſupreme legiſlative powers are veſted in a ſenate and houſe of aſſembly, which meet at leaſt once in each year. The ſenators are elected for four years; the members, or repreſentatives, as they are called, who compoſe the houſe of aſſembly, are elected annually. The number of ſenators is limited to thirty-two; that of members is not to exceed 150. For the convenience of electing ſenators, the ſtate is divided into four great diſtricts: the ſouthern, which elects five ſenators, and comprehends ſix counties; the middle, eight; the eaſtern, nine; and the weſtern, twenty-two. The general election is held annually. A cenſus of the electors is taken every ſeven years, and the repreſentation apportioned according to the numbers in the reſpective counties, increaſing the number of repreſentatives each year by the addition of two, until they amount to 150. The ſenators are divided into four claſſes, elected at different periods, ſo that ſome new ſenators are choſen annually. The governor is commander-in-chief of the militia, and admiral of the navy, of this ſtate: he has power to convene the legiſlature; to grant pardons and reprieves for crimes, except treaſon and murder; and can ſuſpend the execution of ſentences in thoſe caſes till the ſitting of the legiſlature, which alone has a right to pardon. A council of reviſion conſiſts of the governor, the chancellor, the judges of the ſupreme court, or any two of them, whoſe duty it is to reviſe all bills about to be paſſed into laws; and if they object in writing to a bill, a re-conſideration takes place, and the ſame muſt be amended or approved by two-thirds of both houſes before it can then become a law: and this is the negative of the executive power. If the council neglect to return a bill, in ten days it becomes a law, unleſs the legiſlature has previouſly adjourned. A council of appointment conſiſts of the governor, and a ſenator from each of the four great diſtricts, choſen annually by the legiſlature. In this council, the governor preſides, with only a caſting vote. The right to nominate is veſted concurrently in the governor and the other members of the council. The liſt of officers annually appointed by this council is enormous, and conſiſts of moſt of the ſubordinate officers of the ſtate.

The chancellor holds courts of equity, and appoints the officers of his court. The ſupreme court is a court of law. It conſiſts of a chief-juſtice and four aſſociate judges. County courts conſiſt of a firſt judge and a number of aſſociate juſtices. Circuit courts are held in the reſpective counties by a judge or juſtice of the ſupreme court, and the judge and juſtices of the county. Juſtices of the peace have cognizance of trials for the recovery of debts to the value of twenty-five dollars; and in New York to the value of fifty dollars. The right of habeas corpus is preſerved, and the trial by jury.

The great officers of ſtate are, the governor, lieutenant-governor, a ſecretary of ſtate, comptroller, treaſurer, ſurveyor-general, attorney-general, council of appointment, commiſſioners of the land-office, the regents of the univerſity, &c. for the department of ſtate.

Judiciary officers of ſtate, a chancellor, five judges of the ſupreme court, and a judge of probates.

For the general convenience and the better adminiſtration of juſtice, the whole territory of this ſtate is ſubdivided into counties, and theſe into towns.

From the report of the comptroller to the legiſlature of this ſtate in 1811, the productive funds of this ſtate, inveſted vefted in ftock of banks, United States ftock, &c. fecurities on lands, &c. &c. amounted to 4,191,803 dollars 25 cents, producing an annual revenue of 278,489 doll. 96 cents. To this amount of funds fhould be added the fchool fund, amounting to 483,326 doll. 29 cents, producing an annual income of 36,427 doll. 64 cents. The ftate alfo owns about 1,000,000 acres of land, which, valued at two dollars *per acre*, amount to 6,675,129 doll. 54 cents. The expences of government for the year 1811 amounted to 268,366 doll. 22 cents. This eftimate draws an excefs of revenue amounting to 10,123 doll. 74 cents, and including the balance in the treafury, Feb. 16, 1811, of ready funds, to the amount of 34,129 doll. 86 cents.

The *militia* of this ftate confifts of every able-bodied male inhabitant between eighteen and forty-five years of age; and the laws have made an honourable exception in favour of thofe whofe religious opinions are averfe to war. Agreeably to the annual return of the adjutant-general for 1809, the enrolled infantry amounted to 95,324; the artillery, 3102; the cavalry, 3642; giving a total of 102,068.

The conftitution provides for the free exercife of religion in this ftate in the following terms: "And whereas we are required by the benevolent principles of rational liberty not only to expel civil tyranny, but alfo to guard againft that fpiritual oppreffion and intolerance, wherewith the bigotry and ambition of weak and wicked priefts and princes have fcourged mankind: This convention doth further, in the name and by the authority of the good people of this ftate, ordain, determine, and declare, that the free exercife and enjoyment of religious profeffion and worfhip, without difcrimination or preference, fhall for ever hereafter be allowed within this ftate to all mankind. Provided, that the liberty of confcience hereby granted fhall not be fo conftrued as to excufe acts of licentioufnefs, or juftify practices inconfiftent with the peace or fafety of this ftate. That no minifter of the gofpel, or prieft of any denomination, fhall ever hold any civil or military office or place within this ftate." In April, 1804, a law was paffed authorizing all religious denominations to appoint truftees, for the purpofe of fuperintending the temporal concerns of their refpective congregations. And thefe truftees become a body corporate by that general act, capable of all legal tranfactions in behalf of the congregation.

All denominations, therefore, are left at liberty to fupport their own miniftry, and maintain the order of their worfhip, in fuch way as is moft agreeable; and every congregation may defignate from three to nine of its members as truftees, who are, with little trouble, invefted with corporate powers in behalf of the whole, and authorized to hold eftates producing an annual revenue of 3000 dollars. This free toleration has not produced more fects in this than in other ftates lefs tolerant of religious opinions. There are many fects however; and in the enumeration of thofe, no regard is paid to comparative numbers. There are, Englifh Prefbyterians, Dutch Reformed, Congregationalifts, Epifcopalians, Quakers, Baptifts, Methodifts, German Lutherans, Moravians, Roman Catholics, Shakers, Jews, and a few of the Univerfal Friends, or the followers of Jemima Wilkinfon, Scotch Cameronians, Anabaptifts; and Chriftian charity would include fome Indians, befide thofe who profefs Chriftianity. But it is worthy of remark, that many of the above fectarian diftinctions exift merely in name, while their tenets differ lefs, perhaps, than thofe of the fame religious fociety, in the individual opinions.

The *manners* and *cuftoms* of this ftate have undergone a confiderable variation during the period that has elapfed from its firft fettlement to the prefent day. Among thofe who planted the colony of New York, and who for many years afterwards fettled in it, a large proportion confifted of Dutch families, who migrated hither from the Dutch Netherlands, and transferred to the focieties which they eftablifhed here, the rural economy of the population of the Netherlands, of Holland, and of the banks of the Rhine. Soon after their arrival, various parts of this ftate prefented buildings refembling thofe of their native country, and habits of neatnefs, order, induftry, and frugality, which they had practifed from their youth. After the conqueft of the Englifh in 1664, multitudes flocked hither from various nations of Europe, and produced a confiderable change in the original and difcriminating character and cuftoms of this colony. In 1685 it had a numerous acceffion of French Proteftants. In 1710 it was augmented by about one hundred families of poor Palatines from Germany; fixty or feventy of which fettled Germantown on the eaft bank of the Hudfon, and fome at Efopus, now Kingfton. Other early German emigrants fettled on the Mohawk, in Orange county, on Long ifland, and in many other parts where their defcendants are now found. The early Englifh fettled principally at New York and in Long ifland. The French, at New Rochelle, in Weft Chefter county, and on Staten ifland. The Scotch fixed themfelves, during the more early periods, about Albany, and in Wafhington county. Maffachufetts fupplied alfo the eaft part of Long ifland with inhabitants, whofe pofterity form a large fhare of the prefent population. But the Dutch were the original proprietors and firft colonifts, and therefore their poffeffions were the greateft and the moft valuable: nor did they, or the Germans, next to them in number and importance, altogether abandon their difcriminating manners and habits. The Revolution, however, produced a material change in this ftate, and the change, though effected by fanguinary conflicts, was not unfavourable to its general character. The profperity that fucceeded the peace widely diffufed a fpirit of enterprife and of emigration; and was followed by a furprifing increafe of population and wealth. Hence arofe thofe various traits of national character, and thofe diverfified habits, manners, and cuftoms, which have diftinguifhed this ftate. It is obferved, that the new character imparted by the influx of emigrants is beneficial to the ftate; more efpecially as the New England people have introduced their improved agriculture, their fpirit of enterprife, their ingenuity in the arts, and their focial habits. In this ftate, it is faid, there are about 100,000 freeholders; and freehold eftates are known to produce for their proprietors from 30,000 down to 50 dollars *per annum;* and this fact is alleged as forming a peculiar feature of the civil habits, manners, and cuftoms of the population of this ftate.

The Englifh *language* is chiefly prevalent in this ftate; though the Dutch and German are in ufe among people of Dutch and German defcent: but thefe and other dialects are declining, in confequence of the intercourfe and influence of a large majority of thofe who fpeak Englifh. Some few inftances, however, occur, in which public worfhip is performed in the Dutch, German, and Welfh dialects.

The tafte for *literature* and *fcience* is gradually increafing, and is promoted by a variety of publications; and by the progreffive improvement of fchool education, for which a liberal fund is provided, which has been already mentioned. We are informed by the writer of communications, of which we avail ourfelves in the compilation of this article, that there are about a hundred printing eftablifhments in this ftate, and fixty-nine gazettes, befides a very confiderable number of other public journals, which contribute to diffufe various kinds of knowledge. The advancement of literature is promoted by an an institution established in 1787, intitled "Regents of the University of the State of New York;" being a society of twenty-one gentlemen, possessing adequate powers derived from the legislature for superintending colleges, academies, and schools. The university of New York is acquiring distinction, and the Columbia college claims high reputation. See COLLEGE.

In this state there are fifteen banking companies, with a very considerable sum of capital stock, which is said to have amounted in 1811 to 12,380,000 dollars; and 11 incorporated assurance companies. The manufactures of this state, consisting of woollen, linen, and cotton cloths, leather, paper, hats, iron, &c. are in an improving condition, and are said to have amounted, in 1811, to 30,000,000 dollars, of which 12,000,000 were produced by household industry and enterprise. If we judge of the *commerce* of this state by the returns of 1810, it must appear to be very considerable. The domestic exports of that year amounted to 10,928.573 dollars, and the foreign to 6,313,757, making a total of 17,242,330 dollars; and it is said that the port of New York yields about one-fourth of the revenue of the United States, arising from commerce. The exports, exclusive of articles from foreign countries, consist principally of beef, tallow, pork, hams, lard, wheat, maize, rye, butter, cheese, pot and pearl ashes, flax-seed, peas, beans, horses, cattle, lumber, flour and meal, bread and biscuit. The foreign exports are composed of important articles. Wheat, which is the national staple, is exported annually to a very great amount; and about 6,000,000 of bushels on an average, after deducting the supplies for the country, are sent to market from the surplus product of this state. The average annual payments into the treasury of the United States, for duties on imports, tonnage, &c. exceed 4,000,000 of dollars from the district of New York.

The Societies for promoting Agriculture and the Arts in this state are numerous. It has also several *Medical Societies;* an *Historical Society;* and also an *Academy of Arts* lately established at New York. *Bible* and *Missionary Societies* are instituted in New York, Albany, and some other counties; and the *Charitable* and *Humane Societies* abound. In the city of New York alone there are about forty benevolent institutions; and there are societies of the same kind, as well as those of a literary nature, in Albany, Hudson, Schenectady, Troy, Poughkeepsie, Kingston, Newburgh, Utica, and most of the large towns.

The *State-Prison*, or *Penitentiary*, is about two miles from the city-hall, in the city of New York, on the E. bank of the Hudson: it was built in 1796-7, and together with its buildings and courts comprises four acres of ground. The immediate government of the prison is committed to seven inspectors. The convicts are all dressed in uniform, the sexes kept separate, and all are comfortably clothed and fed. Great care is taken of their morals, in the benevolent hope of a reformation.

The *Natural Curiosities* of this state comprehend the cataracts or falls of Niagara, of the Mohawk, of the Hudson, of West Canada creek, of Black river, Seneca river, Genesee river, and some others of less note. It is probable, that the southern and western parts of this state were occupied by a considerable proportion of Indians at a remote period. So long ago as the year 1535, the country about the lake Onondaga was considered as a favourite situation by the wandering tribes: but their condition was not much known till about the year 1635. At that time, the Iroquoise, or Five Nations, occupied the countries from lake Erie to Ontario, the St. Lawrence, around lake Champlain, and the whole of that watered by the Hudson down to the Highlands, were very numerous and warlike. Such was their ascendancy, that the Indians of the lower country of the Hudson, on the Connecticut, the Delaware, and Susquehanna rivers, were in a kind of subjection to them. Onondaga was the principal settlement, and the seat of Indian power. Their combination consisted of Onondagas, Oneidas, Mohawks, Cayugas, and Senecas; and it was then so powerful as to be able to send several thousand warriors on distant expeditions. The first Christian colonists, availing themselves of Indian wars, which they promoted, taught the Indians to despise and abhor those for their hypocrisy and perfidy whom they had first considered as beings of a superior order; and thus originated the implacable enmities which not only continued but increased when the French and British became rival nations. About the year 1690, the English erected a strong fort at Onondaga; and in 1696, the French sent a considerable force against the Indian settlement, and succeeded in destroying it. From this time, colonies of each of these nations were planted there at different periods. But we forbear, to pursue their history, and to trace the sanguinary conflicts that served mutually to irritate and incense Indians and professed Christians. At this time, the principal settlements of the Indians are at Oneida and Onondaga, on the Genesee and Alleghany rivers, Buffalo creek, and Tuscarora, besides other places which we have not room to enumerate in detail. But we must hasten to finish this sketch of the New York state by a brief abstract of its *history*.

Soon after the discovery of America, towards the commencement of the 16th century, the present state of New York was possessed by the Iroquoise, and Canada by the Algonquins, two rival nations of Indians. About the year 1608, the French planted colonies in Canada, which they had laid claim to from having first sailed up the St. Lawrence as far as the present Montreal. In 1609 Champlain, the founder, discovered lakes Champlain and George, when he defeated a small party of the Iroquoise. In 1608 Hudson, an Englishman, discovered the East and North rivers, ascending up the latter as far as the present Albany; and soon after he sold his right to the Dutch. In 1614 the States General of Holland erected a fort at Albany, and granted an exclusive trade on Hudson river to the Dutch West India company; and in 1629, Wouter van Twiller, the first governor, arrived, and took the command of New Netherland, as it was then called. The English, who still laid claim to this country, objected to the sale of Hudson; and in 1663-4, the English king granted the whole to his brother James, duke of York and Albany, afterwards James II. A small armament subdued the colony for England, which then took the name of New York, as did the city also. In 1673 New York was conquered by the Dutch, but restored in 1673-4. The duke's grant was confirmed, and the colony assigned to the English by treaty; and this right they held till the Revolution. From the surrender of the province in 1664 to 1683, the duke of York possessed full sovereignty. He appointed the governor and the council, who made rules and orders that were acknowledged as laws. These were called the duke's laws; they were collected and arranged about 1674, and a copy of them is deposited among the records of the state. Those, it is said, which were made in 1683, and after the duke's accession to the throne of England, when the people were admitted to a participation of the legislative power, are defaced or lost. No regard is now paid to any laws made here antecedently to 1691, when the first legislative assembly was organized. New York was then divided into nine counties, and the house consisted of seventeen delegates. The second legislative assembly was convened in 1708. We shall not minutely trace the ſeries of events that occurred in this ſtate before the year 1776, when, on July 4, the thirteen united colonies were declared independent. This was followed in 1777 by the formation and adoption of the ſtate conſtitution, by a convention of delegates, which was reviſed in 1801. In 1783, New York was evacuated by the Britiſh, and general Waſhington made his public entry Nov. 25. In 1787 the preſent conſtitution of the United States was propoſed by the convention, and acceded to by this ſtate in 1788, by a majority of 30 to 25 votes. General Waſhington was elected preſident of the United States, and Congreſs met at New York for the firſt time under the new federal conſtitution, March 4, 1789. In 1797 Albany was made the capital of the ſtate. In 1801 the legiſlature divided the ſtate into thirty counties, and theſe into towns. An academy of the fine arts was founded in New York. In 1807 a ſteamboat was eſtabliſhed on the Hudſon for paſſengers, between New York and Albany; and in 1811 their number was 5. In 1809-10, the capitol was built at Albany, at an expence of 115,000 dollars, and was firſt uſed by the legiſlature in the ſeſſion of 1809-10.

York, *New*, a county in the American ſtate of the ſame name, compriſes the iſland of Manhattan, or York iſland, on the E. ſide, and near the mouth of Hudſon river. It is about $14\frac{1}{2}$ miles long from N. to S., and in breadth varying from half a mile to two miles: its area is about $21\frac{3}{4}$ ſquare miles, or 13,920 acres. It is ſituated between 40° 42′, and 40° 52′ N. lat., and 0′ and 8′ E. long. from the city of New York. It is bounded on the N. and E. by Haarlem and Eaſt rivers, S. and W. by the Hudſon, or by York bay, and the ſtate of New Jerſey. The limits of the county, town, and city of New York are the ſame; and the only legal ſubdiviſions are the wards, ten in number. The juriſdiction of the city and county of New York extends to low-water mark on the oppoſite ſhores of the waters that ſurround this county. The agriculture of New York county is highly reſpectable, and its horticulture is in the firſt ſtyle of the country. The whole population of the county probably exceeds 100,000; by the cenſus of 1810, it amounted to 96,373. This county ſends 11 members to the houſe of aſſembly.

York, *New*, a city of America, the capital of a county of the ſame name, is ſituated on the E. bank, at the confluence of Hudſon and Eaſt rivers, at the ſouth end of New York iſland. N. lat. 40° 42′ 40″. W. long. from Greenwich 74° 0′ 45″. The compact part of this city extends along the Hudſon about two miles, and along Eaſt river, from the S.W. angle of the battery, near four miles: its circuit is about $7\frac{1}{2}$ miles. The ſtreets of the ancient part are irregular; but the northern part has been recently laid out to greater advantage. Many of the ſtreets are ſpacious, running in right lines, and interſected by others at right angles. The ſurface has at preſent a gentle aſcent from the Hudſon and Eaſt rivers, and commands a fine view on the right and left of the town, the above-named rivers, and their crowds of ſhipping. The principal ſtreets are, Broadway, opening to the N.E., and extending through the whole length of the city, Greenwich-ſtreet, Pearl-ſtreet, &c. &c. The uſual tides at New York are about ſix feet, and the depth of water is ſufficient for the largeſt ſhips; and the harbour, which is ſafe and good, is capacious enough for the largeſt fleets, and very rarely obſtructed by ice. The houſes of this city are well built of brick, and its public buildings are numerous and elegant. The firſt of theſe that deſerves mention is the city-hall, in which are held the courts for the city and county of New York. This building ſtands on elevated ground, and its ſtructure is ornamental to the city. The whole number of the churches, or houſes for Chriſtian worſhip, is 37, beſides a Jewiſh ſynagogue. Of theſe, eight are Preſbyterian, eight Epiſcopal, four Dutch Reformed, three Scots Preſbyterian, three Methodiſt, two for Friends or Quakers, two Baptiſt, two German Lutheran, one French Proteſtant, one Moravian, one Roman Catholic, two African. The New York hoſpital is an extenſive eſtabliſhment; the cuſtom-houſe adjoins the battery at the S.W. angle of the city; the gaol and bridewell are oppoſite to the Park, and the alms-houſe is on the ſame ſquare with the gaol, bridewell, and city-hall. The college is about midway between the Park and the river Hudſon; and St. John's church, reckoned the moſt elegant in the city, is in Hudſon-ſquare, farther north. The ſtate-priſon is two miles N. of the battery, on the bank of the Hudſon. Here are alſo a library and theatre, ſix market-houſes, and many other buildings that might, if ſpace were allowable, be enumerated. There are eight banking-companies in this city; and their houſes and offices, together with thoſe of the inſurance, manufacturing, and other companies, and thoſe of various ſocieties, add to the number of edifices that adorn the metropolis. The population, which by the cenſus of 1810 was eſtimated at 96,373, is ſuppoſed to amount to more than 100,000. The city and harbour of New York have been lately fortified againſt naval aſſaults at a very great expence: but we ſhould be tedious in minutely deſcribing the works which have been conſtructed for this purpoſe. The number of charitable eſtabliſhments, and of ſchools for education in this city, is very great, and does honour to the diſpoſition and liberality of its inhabitants. The markets, which are kept every day, are well ſupplied with the productions both of land and water. The public walks and amuſements in the vicinity of this city afford attraction to its ſtated inhabitants, and to thoſe who occaſionally reſort hither. The theatre, reading-rooms, public-gardens, park, and walks on the battery, afford amuſement, and contribute to activity and health.

The city of New York is governed by a mayor, recorder, aldermen, and aſſiſtants, who conſtitute the common council. Each ward chooſes an alderman and aſſiſtant. The mayor, deputy-mayor, recorder, and aldermen, are ex-officio juſtices of the peace, and juſtices of oyer and terminer; and the mayor, aldermen, and commonalty, are authorized to hold a court of record or of common pleas; and this is called the mayor's court, and deemed of great importance. For the manufactures, commerce, literary inſtitutions, &c. &c. of the city of New York, we refer to the account already given of the ſtate of *New* York. Meliſh. Morſe. Spafford's Gazetteer of New York, 1813.

York, *New*, a poſt-town of Virginia; 167 miles S.W. of Waſhington.

York *Town*, or York, a townſhip of Weſt Cheſter county, in the ſtate of New York, 45 miles N. of New York, bounded N. by Ducheſs county, E. by Somers and Newcaſtle, S. by Newcaſtle, W. by Cortlandt; in length N. and S. 10 miles, and nearly 4 miles wide. The general ſurface is hilly, but productive, and well diſtributed into arable, paſture, and meadow lands. In 1810, here were 269 taxable inhabitants, 142 electors, and in all 1924 inhabitants.

York *Town*, a town of the ſtate of Virginia, capital of the county of York, on the right bank of York river, about 10 miles from its mouth, containing about 800 inhabitants. In the year 1781, the Britiſh army under lord Cornwallis ſurrendered themſelves priſoners of war to the united forces of America and France near this town, and was the occaſion of a peace which followed ſoon after. A marble

 column,

column, with a fuitable infcription and trophies, was ordered by Congrefs to be erected on the fpot in commemoration of the event; 8 miles E. of Williamfburgh.

YORKSHIRE, a county in the northern part of England, which, for extent, for its number of inhabitants, and for its natural and artificial productions, is by far the moft confiderable in the kingdom. In its general form the county is an irregular quadrangle; the longeft diagonal extends from N.W. to S.E. about 130 miles, and the fhorteft from S.W. to N.E. about 90 miles. The area of the county comprehends about 5,960 fquare miles, or above 3,814,000 ftatute acres. Yorkfhire, taken at its extreme points, is fituated between the parallels of 53° 18′, and 54° 40′ N. latitude, and between 2° 40′ of W. and 0° 10′ of E. longitude from Greenwich. On the N., the E., and part of the S. fides, it is diftinctly defined by rivers and by the fea. On the N. it is feparated in its whole extent, from the county of Durham, by the river Tees. From the mouth of this river to the entrance of the Humber, the whole E. fide is wafhed by the German ocean. By the eftuary of the Humber and the river Trent, it is divided from Lincolnfhire on the S. The limits between Yorkfhire, and the counties of Nottingham, Derby, and Chefter on the S., and thofe feparating it from Lancafhire and Weftmoreland on the W., are merely conventional, being indicated by no natural feature of the country; the latter, however, in general, coincide with the mountainous range which diftinguifhes the northern from the fouthern provinces of England. At a very early period of the Saxon dominion, the great county of York was fubdivided into three diftricts, ftill recognifed, and ftill under the corrupted name of ridings. Thefe are termed north, eaft, and weft, in reference to their relative pofitions with refpect to each other, and to the capital city of the county. The North Riding is fubdivided into 12 wapentakes, the Eaft into 7, and the Weft into 11 wapentakes; the whole county thus containing 30 wapentakes and 563 parifhes. The wapentake, a divifion adopted in certain northern counties of England, correfponds generally to the cantred or hundred of the fouthern provinces. The whole county comprehends one archiepifcopal city, York, and 59 market-towns, of which 13 are parliamentary boroughs. Of thofe laft in the North Riding are 5, *viz.* Malton, Northallerton, Richmond, Scarborough, and Thirfk; the Eaft Riding contains three boroughs, Beverley, Heydon, and Hull; in the Weft Riding the five boroughs are, Aldborough, Boroughbridge, Knarefborough, Pontefract, and Ripon. Yorkfhire fends thirty members to parliament; *viz.* two for the county, two for the city, and two for each of the boroughs juft named. According to the official reports made in 1811, the number of houfes and inhabitants in the county was the following:—In the North Riding 33,567 houfes, and 152,445 inhabitants; in the Eaft Riding (York city included), 31,420 houfes, and 167,353 inhabitants; and in the Weft Riding, 129,575 houfes, and 653,315 inhabitants. From this ftatement, Yorkfhire, at that period, contained altogether 194,562 houfes, and 973,113 inhabitants, or on an average 163 perfons for each fquare ftatute mile.

General Appearance, Soil, and Climate.—Yorkfhire is an extenfive and interefting county: in its geographical features, and geological characteriftics, it prefents important themes for inquiry and difquifition. Its ancient hiftory, and the numerous antiquities with which it abounds, afford other and not lefs interefting topics for inveftigation and comment. The manufactures, commerce, and trade of the county; its mineral productions, and agricultural practices, are alfo entitled to the moft careful and critical developement of the topographer. It is, however, to be regretted, that neither of thefe fubjects has hitherto been fatisfactorily elucidated by a local hiftorian: whence we fhall be neceffitated to refort to and cautioufly analyfe feveral detached and imperfect works, to render a fhort topographical account of this widely-extended county in any degree ufeful to the general reader. In the fequel thefe works will be referred to.

Yorkfhire prefents a great variety of furface: mountains, hills, vales, moors, fens, rocks, coaft, and rivers, are its component parts; but thefe are greatly diverfified. The North Riding confifts principally of two hilly regions, feparated by a comparatively low tract, which opens on the S. into the fpacious plain or vale of York. The hilly parts are commonly termed, from their pofition and their nature, the E. and the W. moorlands. Thofe on the E. bounded by the valley of the river Tees on the N., and by the fea on the N.E., occupy a fpace of 30 miles from W. to E. by about half as much from N. to S. They confift in general of bleak heath, interfperfed with loofe blocks of ftone, or with peat-mofs and bog. The whole is deftitute of wood, excepting in a few interfecting dales or valleys, where cultivation is practicable. Of thefe dales a few are of moderate extent, particularly Efkdale and Bilfdale, in the eaftern parts toward the fea. The weftern extremity of thefe moorlands, in the diftrict of Hamilton, produces heath intermingled with large quantities of coarfe grafs. Between the N. edge of the moorlands and the river Tees is the fertile diftrict of Cleveland. Several productive valleys interfect the W. moorlands, of which Wenfleydale is the moft confiderable. Watered by the river Ure, the bottom of the valley furnifhes rich grazing grounds, bordered on each fide by floping inclofed fields, which reach up the hills for more than a mile from the river. In the Eaft Riding the face of the country, although varied, is lefs boldly characterized than that in the N. It is divided in the middle into two extenfive plains, by the Wolds, a range of hills ftretching N. and S. Towards the fea the coaft of this Riding is in general low when compared with that of the North Riding; but in feveral places it rifes to cliffs of confiderable height, as at and in the vicinity of Flamborough-head. The S.E. part of this Riding confifts chiefly of a tract of fen and marfh, about 20 miles in length, and four in breadth, which fpreads from the fea to the Humber. This part of the Riding, forming the wapentake of Holdernefs, runs out to the S.E. and S., and terminates its courfe at the Spurn, a well-known point on the N. fhore of the Humber. A fucceffion of eafy rifings forms the eaftern afcent of the range of the Wolds; but on other fides they are fteep; and the whole have an agreeable and peculiar appearance. Confidered with refpect to extent and population, to manufactures and trade, the Weft Riding is by far the moft important divifion of Yorkfhire. Its furface is very irregular, varying from the low marfhy tracts in the E. to the rocky mountainous country in the W. The level marfhes are the continuation of thofe already mentioned in the Eaft Riding, and extend weftward nearly to the great N. road through Doncafter. Still farther weftward lies the middle divifion of the Weft Riding, gradually and beautifully fwelling into hills, and extending to Sheffield, Bradford, and Ottley. Beyond thefe towns, the country becomes rugged and mountainous, and is compofed chiefly of black moors, which terminate in the lofty range of hills bordering on Lancafhire. Thefe hilly and mountainous tracts are not, however, without many beautiful and romantic valleys, among which are thofe watered by the rivers Aire, Nid, and Wharf. Several of the fmaller dales are well-

well-wooded and inclofed, and have numerous villages interfperfed.

The foil of Yorkfhire is not lefs variegated than the furface. In the E. moorlands of the North Riding, wherever the ground is covered with ling or heath, the upper foil is invariably black moor or peat: but the fubfoil is various, and confifts of clay, free-ftone, and hardened fand. In that part of the moors called Hamilton, the foil confifts generally of fine loam on lime-ftone rock. In the interfecting dales, black moory earth, fand, and grit-rock, more or lefs, prevail; but the vale of Cleveland, along the river Tees, is compofed chiefly of ftrong tenacious clay. Lime-ftone, or a calcareous rock, is the general bafis of the W. moorlands; and the beneficial effects of this fubfoil are evident in the grafs and other ufeful productions with which the furface is generally covered. In the extenfive tract of plain ftyled the Vale of York, which occupies the interior parts of the county, and comprehends portions of all the three Ridings, confiderable changes of foil are found. In the N. part towards the river Tees, a rich gravelly loam prevails. The flopes of the high grounds on the E. and W. are in fome places cold, and abound in fprings; but in the greateft part the foil is ftrong and fertile. Of the Eaft Riding, the moft ftriking feature is the range of hills called the Wolds, compofed of chalk; but the furface is in general a light free loam, interfperfed with chalky gravel, often very fhallow. The great plain between the Wolds, the fea, and the lower part of the Humber, contains many extenfive tracts of fertile cultivable land, efpecially in the N. and E. quarters; but the fouthern diftricts, towards the river, are covered with marfhes and fens, fufceptible, where draining can be practifed, of material improvement. In the continuation of thofe fens, fituated on the W. of the Wolds, called the Levels, the foil is either clay or fand, with moorifh tracts interfperfed; but on the banks of the Darwent and the Oufe ftrong clay and loam prevail. In the extenfive Weft Riding foils of every kind are to be found, from deep ftrong clay and rich loam to the pooreft peat-earth. Clay and loam, but mingled with fome fand and moor, prevail in the E. diftrict of this Riding, while the middle divifion confifts chiefly of loam on a lime-ftone bafe. Similar foils extend through the W. parts, but are frequently interrupted by tracts of moor of different kinds.

In a country of fuch extent, and of fuch variety of foil, elevation, and expofure, as Yorkfhire, an accordant variety of climate, with regard to temperature, humidity, and falubrity, muft naturally be experienced. The E. moorlands, advancing high and bold into the German ocean, are neceffarily expofed to the cold, moift, and impetuous winds from the N. and E. The climate there, however, is rather difagreeable than unhealthy; for the high grounds are frequently involved in fogs and vapours from the fea. Among the W. moorlands the climate is ftill more fevere; but its effects on the productions of the furface are powerfully counteracted by the calcareous rock of which thofe mountainous tracts confift. By their diftance from the fea, combined with their much greater elevation, the fnow remains on them confiderably longer than on the E. moorlands. But the greateft obftacle to agricultural labours in the W. parts of the county is the almoft inceffant rain which falls among the mountains.. On them are accumulated and condenfed the vapours collected by the oppofite winds, which prevail on the contrary fides of the ifland. By the humidity thus produced, no attempt to raife corn-crops among thofe high lands can fucceed. In the intermediate plains and gently-fwelling tracts of the centre of the county, the climate is, on the contrary, in general mild and temperate, in proportion to the remotenefs from the mountainous quarters. The low grounds on the banks of the Darwent, are, however, fo moift, although warm, as to be much better adapted to pafturage than to corn-land. What is faid of the climate of the W. parts of the North Riding is equally applicable to the correfponding portion of the W.; for there the climate is alfo rainy, cold, and ftormy. At Sheffield, although on the S. border of the county, the quantity of rain which falls in a year is about 33 inches. It is, indeed, found by experience, that the lofty tracts which feparate Yorkfhire from Lancafhire and Chefhire are fully as fubject to fog, rain, and ftorms, as any other portion of England. But notwithftanding thefe circumftances, the air is pure and healthy. The middle and lefs-elevated tracts of the Weft Riding are equally healthy, milder, and lefs humid; holding a defirable medium between the tempeftuous blafts of the mountains in the W., and the dull fogs and damps which ufually befet the low marfhy country in the E. On the oppofite fides of the Wolds, in the Eaft Riding, a different temperature is experienced; for by thofe hills the W. divifion is in general fheltered from the cold damp winds from the fea and the entrance of the Humber, which prevail over the E. divifion. On the Wolds themfelves the air is fharp, and the fnow remains for a confiderable time on the ground. But the mildnefs of the climate in the W. Levels is abundantly compenfated, in regard to falubrity, by the vapours of the marfhes.

Mountains.—The E. moorlands of the North Riding form a peculiar feature in the county; for they are wholly detached by their pofition, and by their fubftance, from the mountains in the W. Some points of the E. moorlands rife nearly 900 feet above the level of the fea; but the moft remarkable fummit of the whole is Rofebury Topping. This fingular hill, fituated midway between Stokefley and Guifborough, towards the N.W. edge of the moors, fhoots up in a conical form, to the height of 1488 feet above the fea. By its detached pofition and fuperior elevation, it commands, in all directions, a profpect at once extenfive and interefting. The hill feems to reft on a bafis of alum-rock, interfperfed with iron-ftone; and its pinnacled fummit indicates to the furrounding country the approaching changes in the weather; for when the fummit is involved in clouds, rains feldom fail to defcend on the neighbouring low grounds. It is, however, on the W. borders of the county, that the moft elevated mountains are found. Thefe are a portion of the chain, which, commencing in the S. in Staffordfhire, extend northward, with increafing elevation, through Derbyfhire, Lancafhire, Weftmoreland, Cumberland, and Northumberland, into Scotland. In that portion of this range which belongs to Yorkfhire are feveral fummits of very confiderable elevation above the fea. Of thefe, the moft remarkable are, Pennigant, which rifes, according to barometrical meafurement, to the height of 3930 feet; Ingleborough, 3987 feet; and Whernfide, 4052 feet. The laft mountain is the higheft in England; for Crofsfell on the borders of Cumberland is in height only 3839 feet; Skiddaw, 3530; and Snowden, the higheft in Wales, 3568. Bennevis, a detached mountain in the N. of Scotland, and the moft elevated in Britain, rifes to the height of 4387 feet. Pennigant, fituated about 7 miles N. from Settle, is fteep and towering. Ingleborough confifts of a bafis of lime-ftone, but towards the fummit the grit-rock appears. The E. and S. fides of this mountain are very fteep, and of difficult accefs, on account of a deep morafs at the bottom; but the W. and N. fides, particularly the former, may be afcended

afcended with eafe. Continually receiving vapours from the Irifh fea on the W., Ingleborough is feldom free from clouds, and the whole mountain abounds with fprings: whence it is covered with verdure, and fheep graze on the moft elevated parts. In the vicinity appear Pennigant, diftant 6 miles to the E., and Whernfide 5 miles to the N. On the N.W. are the mountains of Weftmoreland, and on the W. fpreads out the low land of Lancafhire, bounded at the diftance of 24 miles by the Irifh fea, of which a great portion may, in clear weather, be defcried. In the midft of a circle of hills rifes Whernfide, on which account, although more elevated, the views from it are not equally interefting with thofe from Ingleborough. Near the fummit are feveral fmall lakes or pools, there called tarns, one of which is about 180 yards in length by nearly an equal breadth. In the Eaft Riding, the only hills of note are the Wolds, which exhibit themfelves to advantage, in rifing out of the low country around them; but at no point are they fuppofed to exceed 600 feet in height.

Rivers.—Along the whole length of the North Riding, from W. to E., the county is bounded by the river Tees. Rifing in the mountains of Weftmoreland and Cumberland, it purfues a very indirect courfe into the German ocean below Stockton, where it fpreads out into an eftuary three miles in breadth. The river Tees is navigable for fhips of confiderable burthen up to Stockton; but the channel is ferpentine and intricate, and the current is rapid. Commodious anchorage is, however, found at the entrance, in winds from the W. and S. A few inconfiderable ftreams from the W. moorlands fall into the river Tees; but the great body of the waters of Yorkfhire take their courfe in the oppofite direction, and unite with the Humber. Of thefe rivers, the moft northern is the Swale, which, rifing in the W. moorlands, enlivens the romantic Swale dale, and, after vifiting Richmond, bends S.E. until it reaches Boroughbridge, where it unites with the Ure. The latter river, proceeding from the fame moors, paffes near to Ripon, and in fome part of its courfe feparates the North and Weft Ridings. Having received the Swale, about fix miles below Boroughbridge, the Ure takes the name of Oufe, from an infignificant rivulet which joins it on the W. fide. Under this laft appellation the combined ftream, ftill farther augmented by the waters of the Nid, traverfes the city of York, where it becomes the limit between the Weft and the Eaft Ridings; and being navigable for large barges up to that city, it receives on its W. fide the rivers Wharf and Aire: at laft, after a very wandering courfe to the fouthward, in conjunction with the Trent, it difappears in the eftuary of the Humber. The Aire, already mentioned, a very confiderable ftream, iffuing from the mountains of Craven, facilitates by its waters the important manufactorial commerce of Leeds. Receiving on the W. fide the current of the Calder, which performs the fame fervice to Wakefield, the joint ftream conveys an important acceffion to the Oufe. Still farther to the S. the Don purfues its courfe from the W. mountains to Sheffield, where it bends to the N.E. by Rotheram and Doncafter, to its influx into the Aire. Before it be loft in the Humber, the Oufe receives on the E. the Darwent, which, having its fources in the E. moorlands, flows in general S.W. by Malton, acrofs the weftern parts of the E. diftrict. Two fmall ftreams ftill deferve notice in Yorkfhire, not fo much for their length of courfe, or volume of water, as for their great utility in forming the principal ports of the county. In the E. moorlands of the North Riding rifes the Efke, which after watering Efkdale opens into the German ocean through the harbour of Whitby. The river Hull traverfes the Eaft Riding from N. to S. paffing near to Beverley, and, at its influx into the Humber, forms the fecure though not capacious harbour of Kingfton, which, from the river, is generally alfo called Hull.

Canals of Yorkfhire. See CANAL.

Coafts and Harbours.—The fea-coaft of Yorkfhire, though very extenfive, affords but very few harbours of any importance. The mouth of the river Tees, as already ftated, is frequented as a place of anchorage in winds from the fouth and the weft. Veffels alfo often refort to other fpots on the coaft when the wind blows off the land, fuch as to Robinhood's bay to the fouthward of Whitby, to Filey bay on the north-weft, and Bridlington bay on the fouth-weft of Flamborough-head.

The principal harbour on this coaft is that of Whitby. (See WHITBY.) Scarborough bay is ferviceable in wefterly winds; and the pier, a noble ftone ftructure, furnifhes eafy accefs and fafe protection for fhips of confiderable burthen; for at fpring-tides, the depth of water at the entrance is from twenty to twenty-four feet: for want of a back-ftream, however, the harbour is in danger of being filled with fand. The entrance of the Humber affords to fhipping lefs protection than from its locality might be expected; for the fhores on both fides of Yorkfhire on the N.E. and of Lincolnfhire on the S.W. are low, and the channel is much incumbered with fand-banks and fhallows. Notwithftanding thefe difadvantages on its north bank, juft at the point where the eftuary turns its direction from E. to S.E., is fituated the much-frequented and important harbour of Kingfton-upon-Hull. The natural accommodation of the river has proved very infufficient for the increafed fhipping belonging and trading to the port, which ranks as the fifth in the kingdom. Docks of great capacity have therefore been excavated, in which veffels lie afloat or dry, as may be required. From this port, the produce of the great manufacturing diftricts in the interior of the country are exported to foreign parts; and there foreign commodities are transferred to fmaller veffels, to be in their turn diftributed over the interior of the kingdom. The moft remarkable projection of the coaft of Yorkfhire is the bold and lofty promontory, called Flamborough-head. The cliffs rife perpendicularly over the fea to the hight of 100 and 150 yards. They are compofed of a mouldering lime-ftone rock, of uncommon whitenefs; and at the bottom are pierced by a number of caverns, fome of them entering a great way into the rock. A new light-houfe is placed about 400 yards weft from the extremity of the promontory. About fouth by eaft eleven leagues from Flamborough-head is another point of great confequence to mariners. This is the Spurn-point, which, running out fouthwards, low and narrow, forms the north limit of the mouth of the Humber. The light-houfe is fituated in N. lat. 53° 41′, and E. long. 0° 17′.

Agriculture.—From what has been already noticed refpecting the mountainous and the marfhy tracts comprehended within the capacious limits of Yorkfhire, agricultural improvements in them muft be comparatively very limited. In other diftricts, however, particularly in the fpacious plains forming the central parts of the county, every fpecies of amelioration of the foil which the induftry of the inhabitants, availing themfelves of the natural means within their command, could apply, has been generally brought into action. The farms are of very unequal extent and rental, conformably to the nature of the foil and to the fituation of the farmer with refpect to a market. It is remarkable, that in the North Riding leafes are unufual; but although the hufbandman labours on fo precarious tious a possession, changes of occupants of farms are by no means common. In the vale of York one-third of the land is computed to be in tillage, and two-thirds in grass; but in Cleveland, along the south bank of the river Tees, the country is equally divided between corn and pasture. In the environs of Thirsk, where the dairy is the chief object of pursuit, fully three-quarters of the land are devoted to it. In the valleys or dales which intersect the east moorlands, about one-fifth of the surface is in tillage; but in those of the west, a much smaller quantity is usually ploughed: those parts although inclosed are therefore generally in pasture. In few districts of England have improvements in agriculture been more generally or skilfully introduced than of late years in the East Riding. The farms are commonly large, and vary in annual rent from two or three hundred pounds to a thousand; but in the marshy tracts, called the levels, they are mostly small. By drainage there, and in the flat country, in the vicinity of Hull, large tracts, formerly flooded, now produce plentiful crops of corn; the value of the land being thus increased to ten times its former worth. In the hilly range of the Wolds, barley and oats have in many places been superseded by wheat. In the West Riding the farms are generally small, but in the environs of the manufacturing towns a great portion of the ground is occupied by the inhabitants for the use of their families. To the eastward of Leeds, Wakefield, and Rotheram, the greatest part of the Riding is corn-land; but this tract contains no small proportion of common fields. The soil, however, is good, and improvement may be easily introduced. In addition to grain of all sorts, flax is cultivated in the marshlands to considerable extent; and in the environs of York mustard is now a valuable article of cultivation; though it is still considered as the produce of Durham. The horses of Yorkshire, and in particular those of the North Riding, have long and universally been famed. Cleveland furnishes an excellent breed for the coach and the plough; the northern parts of the vale of York others for the coach and saddle; and many of both kinds are bred in the southern parts and the marshes. The East Riding also rears horses of peculiar value. A smaller but hardy and useful kind is bred in the dales of the east moorlands: many of an equally serviceable description are also produced in the moorlands on the west. The horned cattle of Yorkshire are of various kinds, adapted to the nature of their pastures, and to the uses for which they are employed. The north parts of the vale of York and the district of Cleveland produce the Tees-water breed, which is ranked among the largest in the kingdom. In the plains where cattle are chiefly kept for the purposes of the dairy, the milk, and not the form or strength of the race, is the main object of attention with the farmer. The sheep in the various parts of the county are also extremely different in their nature and properties. In the North Riding, the stock has of late years been considerably improved by the intermixture of the Northumberland and other breeds. The sheep of the west moorlands are small; but the wool is tolerably fine: those of the east moorlands are still smaller, but with a very coarse wool. Many of the old sheep-walks on the Wolds, in the East Riding, are now broken up, and converted into corn-land. In the West Riding, by the introduction of the Leicestershire breed, the sheep have in many places been highly improved. Those bred on the west moors and hills of this Riding, when brought down early to pasture in the low grounds, become very valuable for food.

In many parts of Yorkshire, great amelioration of the soil has been produced by hollow-draining; irrigation, paring, and burning the surface, have also been advantageously adopted. In certain tracts, bones bruised in a mill are usefully employed in composts for manure. Considering its great extent, the North Riding of Yorkshire contains but a small proportion of woodlands; the whole having been estimated at about 25,000 acres, of which the vale of York, with its boundary hills to the north, contains about 11,000. Large full-grown timber is accordingly very scarce, excepting on the estates of the earl of Carlisle, C. S. Duncombe, esq. and some other land proprietors. But the oak-timber of this Riding, produced on hard rocky ground, if not of great size, is solid and durable; and hence the valuable qualities of the shipping built at Whitby and Scarborough. The planting of the Wolds in the East Riding has been successfully began by several proprietors. In the West Riding, the quantity of oak and ash is very considerable; and both are much used for ship-building, and for the various demands of the manufacturers: much is also consumed in the coal and other mines. In the vicinity of Sheffield, the duke of Norfolk possesses above 1500 acres of woodland. According to a calculation made in 1799, the waste lands in this Riding amounted to upwards of 400,000 acres, of which one-third seemed to be proper only for planting. No great progress in that operation has, however, yet been made.

Manufactures.—The manufactured productions of Yorkshire, especially of the West Riding, are of the very first importance to the county and to the kingdom, as well as to the multitudes to whom they furnish employment and wealth. The principal inducement for the establishment of those great works in the interior of the country was the plentiful supply of water and fuel for giving motion to machinery, and for the various other operations of the several branches of industry. Leeds, situated on the north bank of the river Aire, has long been celebrated as the centre of the manufacture of woollen cloth; and it is still the great mart for that staple article of the commerce of Yorkshire. (See Leeds, and Woollen *Manufacture.*) The white cloth is chiefly made at and about Dewsbury, among the hills which separate the valleys of the Aire and Calder, and in the vicinity of Wakefield. The mixed cloth is principally made in the villages comprehended in the parish of Leeds to the westward of the town; in the vale of Calder west from Wakefield; and also in the environs of Dewsbury. In the year 1806, the number of yards of broad cloth manufactured in the West Riding of Yorkshire is stated at 10,079,256, and of narrow cloth at 6,193,317. But in 1810 the broad cloth was only 9,826,048 yards, and the narrow cloth had increased to 6,951,762 yards. In 1811, however, the quantity of both sorts of cloth had sensibly diminished; for the yards of broad cloth were only 8,671,042, and those of narrow cloth 6,180,181; one of the many effects produced on the industry, and consequently on the well-being of the county and of the kingdom at large, by the hostilities in which Britain was then deeply involved on both sides of the Atlantic. The cutlery and plated goods of Sheffield are in all their branches carried to a perfection and an extent of which it is not easy to furnish a satisfactory account. The cutlery, consisting of edge-tools of every description, files, anvils, saws, &c. is not confined to that town, but manufactured in all the neighbouring villages. The plated goods, consisting of tea-urns, coffee-pots, tankards, candle-sticks, and many other articles of household use, are all prepared within the town. In it are also several founderies for iron, brass, and white metal.

Minerals, &c.—Excepting the alum on the borders of the east moorlands, and the lead of the vicinity of Richmond towards

wards the oppofite quarter, the North Riding of Yorkfhire furnifhes but few mineral fubftances of peculiar value. Copper of good quality, it is true, was wrought about the middle of the laft century near Middleton-Tyas; but the works have for fome time been difcontinued. Copper was alfo difcovered about twenty years ago at Richmond. In the vale of the river Swale, twelve miles above that town, are feveral very profitable lead-mines. The iron-ftone of the eaft moorlands has not hitherto been applied to any ufeful purpofe. It appears, however, from ancient records, that as early as the beginning of the thirteenth century, iron was wrought and forged in Rofedale. Ayton, a few miles S.W. from Scarborough, is the only place where forges are now eftablifhed, and thofe are but inconfiderable. The great alum works are principally fituated on the fea-coaft on both fides of Whitby, and in the vicinity of Guifborough. See WHITBY and ALUM.

Various parts of the North Riding produce coal, particularly in the plain between Eafingwold and Thirfk; and in the weft moors, the coal hitherto difcovered feems adapted only to the burning of lime: the north part of the Riding is confequently furnifhed with that mineral from the adjoining county of Durham. Good free-ftone for building appears in many parts of the Riding: a few miles weft from Whitby is a quarry from which have been drawn the blocks employed in conftructing the new piers of that town. Limeftone, and a fpecies of marble not inferior to the Derbyfhire, are found in different places; and loofe blocks of red granite are feen on the furface in certain parts of the weft moorlands.

In the Eaft Riding, the chalk of the Wolds is the only mineral fubftance of importance hitherto difcovered or brought into ufe; but the mineral productions of the Weft Riding are of peculiar value; for it contains lime, coal, iron, and lead, in great abundance. None of them, however, are found in the low level tracts in the eaft divifion of the Riding. The lime-ftone extends all to the weftward of a line running northward from Doncafter to Tadcafter. The tracts fituated between the rivers Aire at Leeds and Calder at Wakefield are the principal feats of the coal-mines, which abound likewife in the neighbourhood of Bradford, Barnfley, and Sheffield. Near Bradford alfo there are very confiderable iron-mines. Lead is principally extracted from the mines of Graffington, the property of the duke of Devonfhire.

Yorkfhire contains feveral mineral waters of great virtue and celebrity. The chalybeate and fulphureous fprings of Harrowgate have long been in high repute. See HARROWGATE.

Scarborough, on the fea-coaft of the Eaft Riding, has long been celebrated for its mineral fprings, which iffue from the foot of a lofty cliff on the fhore, a little way to the fouthward of the town. See SCARBOROUGH.

Ancient Hiftory, Remains, &c. — The great county of York was but a part of the territory of the Britifh tribe, called in Roman hiftory the Brigantes: they are not however mentioned by Cæfar. It appears that they were firft overpowered by Cerealis, in the reign of Vefpafian, in the year 71 of the Chriftian era. In 78, the Roman arms were carried beyond the river Tay in Scotland, where Agricola encountered the Caledonians, under Galgacus: but, contrary to the ufual practice of the Romans, after a fignal victory over the natives, as it is reprefented by Tacitus, his fon-in-law and profeffed panegyrift, the Roman commander, retreated into the fouthern part of the country previoufly fubdued. Having eftablifhed a chain of pofts acrofs the narrow ifthmus, between the firths of Forth and Clyde, Agricola was in the year 85 recalled by Domitian. From that period, until the arrival of the emperor Adrian himfelf in Britain in 120, little is known of the tranfactions in the northern parts of the ifland. That Adrian fhould deem it neceffary to repair in perfon to fo remote a portion of the empire, which then comprehended the richeft provinces of the world, is however a proof that the Britons, although overpowered, were by no means reduced to patient fubjection. Renouncing, therefore, a great part of the country included within the chain of forts of Agricola, Adrian conftructed an earthen rampart acrofs the ifland, between the mouths of the rivers Tyne and Edon. While thefe operations were in progrefs, the emperor fixed his refidence in Eboracum, or York; but fcarcely had he returned to the continent when the northern Britons, breaking through the fecond rampart thrown up againft them, joined with the Brigantes in an endeavour to regain their independence. To reprefs thofe attempts, Lollius Urbicus was fent into Britain, who, repelling the natives beyond the Roman bounds, conftructed a wall and towers on the line between the Forth and the Clyde, firft fortified by Agricola. From this event, which happened about 140 until 183, Britain feemed to be tranquil: but then, while the empire was fubject to the monfter Commodus by the exertions of the natives, and the difcontented fpirit of the legions themfelves, the power of the Romans in Britain was reduced to a very precarious fituation. Pertinax, who had ferved in the ifland, and who, by his military talents, was fully qualified to reftore the difcipline and fpirit of former times, was foon cut off by the licentious and diforderly Prætorian guards of Rome; and in 196, Septimius Severus became fole mafter of the empire. The Caledonians ftill continuing their efforts to rid themfelves of the Roman yoke, Severus, although thus far advanced in life, and very unfit for the fervice of the field, found it neceffary to repair to Britain. (See YORK.) In 207 he arrived at Eboracum, in the full determination to quell the reftlefs fpirit of the natives. After an expedition into the northern parts of the ifland, in which the lofs of the Romans is admitted by their own hiftorians to have been prodigious, he fixed his head-quarters in Eboracum; and commanded the rampart thrown up by Adrian between the Edon and the Tyne, to be powerfully ftrengthened, as Urbicus had done on the northern rampart with a continued wall and forts of ftone. Taking advantage of his abfence from the frontiers, the Caledonians again had recourfe to arms: but in 211, while Severus was preparing in Eboracum to repel their affaults, he died, and his fons and fucceffors Caracalla and Geta foon afterwards returned to Rome. Whatever might have been the inclinations of the Brigantes, however gladly they would have combined with their countrymen of the north, yet by the prefence of the imperial court, officers, and troops, every effort on their part muft have been inftantly difcovered and repreffed. Under Caraufius, Britain enjoyed fome femblance of independence; but his affaffination in the midft of his fpirited projects enabled Conftantius to fubject Britain again to the Roman arms. Dying in Eboracum in 307, Conftantius was fucceeded in the weftern portion of the empire by his fon Conftantine, who was prefent at his death, and was immediately proclaimed emperor by the legions. For many years, the Brigantes with the other fouthern provinces of Britain feem to have been fubmiffive to their mafters; but in 364, the northern nations renewed their incurfions, while the oppofite part of the ifland was haraffed by the predatory de-

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fcents of the Saxons. Tranquillity was at laft reftored by Theodofius, whofe fon of the fame name obtained the purple, and after a fhort reign died in 393. Diffenfion within and affault from without were now faft haftening on the overthrow of the mighty empire of Rome; and in the middle of the fifth century of our era, the Romans finally relinquifhed all poffeffion, power, and authority in Britain. Of their long protracted refidence in Yorkfhire, many unqueftionable evidences are found in the capital, and in other parts of the county. The roads eftablifhed by that extraordinary people may yet be traced, traverfing the county in various directions. The whole fyftem of the Roman policy and difcipline was certainly directed to the perfection of their military power.

One great line of probably Roman road, which traverfes the county of York from S. to N., is now called the Watling-ftreet, (a name apparently Saxon,) which was opened from the Rutupian port, in the neighbourhood of Sandwich, in Kent, in various directions, all the way to the wall of Severus. Entering Yorkfhire near Bawtry, it has been traced by Doncafter, (Danum, or the ftation on the river Don,) over Scawfby and Pigburn Leas, to Barnfdale, through Pontefract to Caftleford, fuppofed to be the pofition of the ancient Legiolium, a little below the junction of the rivers Aire and Calder. From this point, the road was conducted by Calcaria, now Tadcafter, to Eboracum, or York. From this city it probably followed the N.E. fide of the river Oufe, croffing it near to Ifurium, now Aldborough, below Boroughbridge, and thence by Leeming-lane to Catterick-bridge, adjoining to which veftiges of Cataractorium are to be feen; there turning more to the northward, it paffed over the Tees at Pierfe-bridge into the county of Durham. Another military road is fuppofed to have been laid out from Mancunium, now Manchefter, in a N.E. direction, by Wakefield, to join the former line between Doncafter and York. North-eaftwardly from York a road feems to have been formed by or near Malton, terminating on the fea-coaft at Dunfley bay, the Dunus bay of Ptolemy. This road is ftill called Wade's caufeway, from the Saxon chief Wada, as Camden thinks, who refided on the coaft in a caftle, perhaps originally erected by the Romans. A branch of this road is fuppofed to have led to Scarborough, when the fheltered beach furnifhed a convenient place for Roman fhipping. The ftraight courfe of an ancient road may be traced, although over the high grounds of the Wolds pointing from York towards Bridlington bay, correfponding probably to the Sinus Gabrantovicorum of the Romans; a branch has alfo been obferved tending towards Hunmonby and Filey bay. Another line may alfo be followed in a direction to Patrington (Practorium) and the Spurn-point, which feems to correfpond with the Ocellum Promontorium of Ptolemy. From Lincoln (Lindum colonia) a Roman road may be traced running N. to the S. bank of the Humber near Wintringham, where are ftill feen veftiges of the ftation, ad Abum. On the N. bank, Brugh indicates the pofition of another ancient ftation, from which a branch of road probably communicated with York. This, however, is not the courfe indicated in the itineraries, which point out a much more convenient courfe from Lincoln to York, acrofs the river Trent at Littleborough, the ancient Segelocum.

The veftiges of Roman works and occupation diftributed over various parts of Yorkfhire are by far too numerous to be mentioned in this place: it muft therefore be fufficient to point out two, Cataractorium and Ifurium. About five miles below Richmond in Swaledale is the prefent village of Catterick, fo named from the Cataractorium of the Romans, of which the veftiges are vifible on the S. bank of the river, a little lower down the valley. Ifurium exhibits the moft remarkable proofs of Roman habitation. Sixteen miles above York, and nearly one mile below Boroughbridge, on the S. bank of the river Ure, is Aldborough, fo called in allufion to the old town, to which it has fucceeded, named by the Romans Ifurium.

Caftles.—Of thefe many ftill remain in Yorkfhire, although in feveral cafes they are either nearly demolifhed, or by later alterations, bear but little refemblance to their original form and ftructure: in fome, indeed, the name alone is preferved. Of York caftle, the keep, or Clifford's tower, is almoft all that is to be feen above the furface of the ground. Scarborough caftle is fituated on a projecting precipitous cliff, 300 feet above the fea, and cut off by a deep natural hollow from the high ground behind it. Richmond has long been diftinguifhed by its extenfive caftle, which was erected foon after the Norman Conqueft by Alan, a kinfman of William the Conqueror, on receiving the vaft poffeffions of the Saxon, Edwin, earl of Chefter. Crake or Creyke caftle, although belonging to the county of Durham, is fituated only twelve miles N. from York, is of great antiquity; for fo early as in 685, it was beftowed on St. Cuthbert by Egfrid, king of Northumberland. Six miles W. from Doncafter, are the caftle and village of Conifburgh, or more properly Coningfburgh. The caftle, one of the moft interefting edifices of the kind in the N. of England, a building of great extent and ftrength, is commanded by the high ground on which the village is placed. The area of the caftle is in circuit about 700 feet, encompaffed by a very deep ditch, now filled with trees. Of Knarefburgh caftle, once a fortrefs of importance, but few remains are now to be feen. It is believed to have been erected by Serlo de Burgh, who received the manor as a reward for his fervices at the Conqueft. Pontefract caftle, the fcene of many tranfactions of note in Englifh hiftory, in particular of the murder of Richard II., is built on a lofty rock. Sheffield caftle, formerly of great ftrength from its fituation, between and at the meeting of the rivers Don and Sheaf, was levelled to the ground by the parliament in the civil wars. The ancient caftle of Skipton, in the W. part of the county, is ftill in a habitable ftate. It now belongs to the earl of Thanet; but was formerly the refidence of the powerful family of Clifford, of which Henry, the fourteenth lord, was, in 1525, created earl of Cumberland. Near the E. bank of the Darwent, S.E. from York, are the remains of the magnificent caftle of Wrefsle, fuppofed to have been erected by Percy, earl of Worcefter, in the reign of Richard II., towards the end of the 14th century. Originally the caftle formed a quadrangle, having a tower at each corner, and a fifth over the entrance. Wrefsle was one of the places of refidence of the great earls of Northumberland, where they lived in a ftyle of fplendour and magnificence, formed on the model and with the ftate of the royal houfehold. Notwithftanding the zeal evinced by the earl of Northumberland in the caufe of the parliament, the caftle was, in 1650, difmantled. Three fides of the quadrangle were demolifhed, and an accidental fire in 1796 completed its deftruction. The fcite belongs to the earl of Egremont.

Seats.—To defcribe the number of admirable ftructures of modern times, with which the county of York is adorned, would require a volume. In this place merely to notice fome of the moft eminent feats is all that can be attempted. About 13 miles N.N.E. from York is fituated Caftle-Howard, the princely manfion of the earl of Carlifle, of the illuftrious houfe of Howard. On the fcite of the ancient caftle of Hinderfkelf the prefent building was erected, about a century ago, by fir John Vanbrugh, the celebrated architect

architect of Blenheim. Castle-Howard, in its general arrangement and appearance, bears an evident resemblance to that superb structure, and indicates the genius of that distinguished artist. In extent of front it exceeds Blenheim, and in exterior display of magnificence it is, perhaps, superior. The interior, spacious and lofty, is enriched with a very valuable assemblage of paintings by masters of the greatest celebrity; and the collection of antique statues, busts, &c. is peculiarly interesting. The surrounding park and grounds are distributed and ornamented in a way suitable to the grandeur of the structure they inclose. Duncombe-park, the seat of Charles Slingsby Duncombe, esq., 22 miles N. from York, also erected by Vanbrugh, is splendid in itself, and splendidly adorned with paintings of the most eminent artists. Harewood-house, the residence of the earl of Harewood, six miles N. from Leeds, is a magnificent structure, commenced in 1760, in which are combined grandeur of design and ornament, with convenience and accommodation of arrangement. One of the greatest ornaments, not of Yorkshire only, but of the kingdom, is Wentworth-house, once the habitation of the distinguished patriot Charles marquis of Rockingham, from whom it descended to his nephew and heir the present earl Fitzwilliam. It is situated in a spacious park, four miles N.W. from Rotheram, and seven N.N.E. from Sheffield. The mansion extends in front about 600 feet, forming altogether a structure of uncommon magnificence. Nor is the interior deficient in appropriate arrangement and splendour. In approaching the house, the attention of the visitor is arrested by a noble mausoleum, raised in 1788, by the present earl, to the memory of his uncle, the marquis. This monument is placed on an eminence, and is in itself 90 feet in height, divided into three parts. The square Doric basement supports a similar structure of the Ionic order, with open arches on the sides exhibiting a sarcophagus; the whole surmounted by a cupola. Within the basement story is a chamber containing a statue of the marquis, by Nollekens. Around the walls are busts of eight of his principal political friends, C. J. Fox, sir G. Saville, &c. Wentworth-house, erected by the earl of Strafford in 1730, but now the seat of Henry Vernon, esq., is a noble fabric. Towards the southern border of the county, midway between Doncaster and Worksop, is Sandbeck, the superb mansion of the earl of Scarborough, erected nearly fifty years ago.

Ecclesiastical State.—A very important change in the condition of the ecclesiastical establishments in Yorkshire, and over England in general, was introduced by William I. Prior to the Conquest the Saxon prelates, with their archdeacons and other delegates, sat in the courts with the earls and sheriffs for the administration of justice; receiving with the lay-judges a share of the fines imposed on offenders. According to the original charter, however, still preserved among the records of the cathedral of Lincoln, the Conqueror declared, that no bishop or archdeacon should, in future, hold ecclesiastical pleas in the hundred-court, nor suffer any cause of a spiritual nature to come under the cognizance of secular persons. Whoever, therefore, offended against the canons of the church was to be tried by a tribunal, to be appointed by the bishop of each diocese. It was also strictly enjoined on all sheriffs, royal officers, or other lay persons, not to encroach on the episcopal jurisdiction. These regulations were afterwards confirmed, in a general council of the nation, by the bishops, abbots, and all the principal nobility; but those nobles and prelates were then almost all Normans or other foreigners. To this artful separation of the ecclesiastical from the civil jurisprudence, the jealousies, contrarieties, contests, and open ruptures, by which the kingdom was, on various occasions, brought almost to its ruin, must be ascribed. In addition to the dissensions occasioned in this way, the dispute respecting the superiority of the see of Canterbury over that of York was conducted with peculiar animosity, between the Norman prelates of both. In 1070, Thomas, a canon of Bayeux in Normandy, appointed to York, repaired to Canterbury for consecration from the hands of archbishop Lanfranc, who had been previously installed; but refusing to swear obedience to the see of Canterbury, the consecration did not take place. The famous Gregory VII. making it now a rule to confer the pall on no prelate who did not appear in person before him, the two contending English archbishops were required to present themselves in the court of Rome, where the dispute was referred for decision to a synod of the clergy of England. By this council, assembled at Windsor in 1072, a sentence amounting to a compromise was pronounced. The rights claimed by Canterbury were confirmed; but Lanfranc dispensed with the oath of obedience from Thomas of York. In his profession of obedience, however, Thomas acknowledged that the archbishops of York and their suffragans were bound to obey the mandate of the primate of Canterbury, when required to attend him in council, wherever it should be held. On the appointment to York of Thurstan, chaplain and secretary of Henry I. in 1115, the dispute was again revived; but in 1121, Thurstan, who had obtained favour at Rome, was permitted by Henry, whom his pertinacity had irritated, to return to York. It does not, however, appear that he ever made any satisfaction for his resistance to the claims of Canterbury; or that a profession of obedience to that see was ever made by any of his successors. From this time, therefore, York maintained its independency, and, a few years afterwards, had certain suffragan bishops placed under its authority. Roger of York, in 1162, procured a bull from Rome, granting him the privilege of crowning the kings of England, possessed by some of his predecessors, and of having his cross carried erect before him throughout the whole kingdom. But in 1165, in the reign of Henry II., the latter privilege was by pope Alexander III. restricted to Roger's peculiar province. Opposing claims were nevertheless advanced on both sides, until Edward III. by influence and management procured from Rome a confirmation of the arrangement he had accomplished between the contending prelates. Then was introduced the casuistical and silly distinction, still preserved, in the titles of the two metropolitans, by which the archbishop of York is styled primate of England, and his brother of Canterbury primate of all England.

The county of York is wholly and immediately under the superintendence of the archbishop, whose suffragans are the bishops of Carlisle, Chester, Durham, and the Isle of Man. The latter, styled bishop of Sodor (the southern isles of Scotland) and Man, presiding over a diocese not formerly pertaining to England, has no seat in the house of peers. Under the archbishop, ecclesiastical affairs are conducted by archdeacons; an office first introduced into the diocese, as it is said, by Thomas the Norman, appointed in 1070.

Fertile and extensive as is the county of York, the number of religious houses erected within its bounds, in former times, was prodigious. "These were in all," according to Burton, (Monasticon Eboracense,) "106; *viz.* abbeys 14, priories 44, alien priories 7, cells 13, and houses of friars of various orders 28." Of those establishments the ruins of many houses still exist; some of them exhibiting very picturesque and attractive monuments of ancient devotion and liberality. St. Mary's abbey adjoining to York gives sufficient indications

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tions of its original grandeur. The abbots of St. Mary's and of Selby, both of the Benedictine order, were alone entitled to wear the mitre on the N. side of Trent. But for an account of these abbeys, and that of Whitby, the reader is referred to the description of the several towns in which they are situated. Of some others, erected in detached situations, a few may be here noticed. About three miles S.W. from Ripon are the magnificent and picturesque ruins of Fountain's abbey, of the Cistercian order, founded in 1132; and so named, not from any abundance of springs of water at the place, but from the village of Fontaines in Burgundy, where St. Bernard, the great patron of the order, was born. But the structure, of which the remains are so great an ornament to the country, was commenced in 1204. Built in the most elegant style of the ancient pointed architecture, the tower and the walls of the church still remain; the roof only being ruined. The length of the church was 351 feet, and that of the transept 186. The great tower, singularly situated at the N. end of the transept, is in height 166 feet. The whole edifice may be considered as one of the finest specimens of the simple but majestic style of the time of Henry III. and his successor Edward I. The abbey now forms a peculiar ornament to the celebrated grounds of Studley-Royal. On the N. bank of the river Aire, three miles to the westward of Leeds, are the remains of Kirkstal abbey, founded in 1147, by a colony of Cistercian monks from Fountain's abbey. The venerable remains of the Cistercian abbey of Rieval, or Rievaulx, are situated in a valley, about three miles northwards from Duncombe-park, from which they appear with peculiar advantage. Of the very ancient monastery of Ripon no part now exists. The collegiate church, or minster, still an interesting edifice, was partly rebuilt in the middle of the 14th century. Roche abbey, situated near lord Scarborough's seat of Sandbeck, in a deep narrow vale, is now reduced to a few arches, and a portion of the nave.

Authorities. — Monasticon Eboracense, or the Ecclesiastical History of Yorkshire, by John Burton, M.D. F.S.A. folio, 1758. Topographical Dictionary of Yorkshire, by Thomas Langdale, 8vo. 1809. Eboracum, or the History and Antiquities of the City of York, by Francis Drake, F.R.S. and F.S.A. folio, 1736. History of Cleveland, by the Rev. John Graves, 4to. 1808. History and Antiquities of the Deanery of Craven, by T. D. Whitaker, LL.D. F.S.A. 4to. 1812. General View of the Agriculture of the North Riding of Yorkshire, by Mr. Tuke, 4to. 1794. Ditto of East Riding, by Isaac Latham, Esq. 8vo. 1794. Ditto of West Riding, by Messrs. Rennie, Brown, and Sheriff, 8vo. 1794.

YORKSHIRE *Cows*, in *Rural Economy*, a term sometimes applied to a large short-horned breed of these cattle, which afford much milk, but which is not of the most rich kind, and which are much produced on the fine pastures in that district. See COW and LIVE-*Stock*.

YORKSHIRE *White*, in *Agriculture*, a perennial grass that thrives well in most situations, and which grows very generally on all soils, except those that are of the most barren and dry qualities. It flowers in the middle of the summer, and is well calculated for sheep, as it answers uncommonly well when closely fed down. It is said not to be much relished by neat cattle, and considered injurious to horses, which, in some cases, are supposed to become affected with a profuse discharge of urine and general weakness in consequence of the use of it. But should any hay, made from this grass, be accidentally given to these animals, and produce these effects, an immediate change of the fodder will prevent any further bad consequences. Its foliage is rather soft and woolly.

The proportional value which the grass at the time the seed is ripe bears to that at the time of flowering, is as 11 to 12.

It is an useful sort of grass in many cases of laying land down to pasture and other such purposes. See HOLCUS *Lanatus*.

YO-SANPOO, in *Geography*. See SANPOO.

YO-TCHEOU, a city of China, of the first rank, in the province of Hou-quang, situated on the Yang-tse river, and on the Tong-ting lake. This lake, which resembles a sea, is remarkable for the greatness of its circuit, which is more than 210 miles; for the quantity of its water, especially in certain seasons, in which the two great rivers of the provinces swelled with rains, discharge themselves into it, passing out on the other side sensibly diminished; and for its astonishing quantity of fine fish which are caught therein. The great number of barks and merchandizes which are brought thither render it one of the richest cities in the empire; its districts contain one town of the second order, and seven of the third; some on the east side of the lake, and others on the west. The country round is every where extremely fruitful, and full of different kinds of orange and lemon trees; 675 miles S. of Peking. N. lat. 29° 23′. E. long. 112° 35′.

YOUB, EL, a town of Algiers; 50 miles S.W. of Tremecen.

YOUGH GLADES, a post-town of Maryland; 173 miles N.W. of Washington.

YOUGHAL, a sea-port, borough, and post-town of the county of Cork, Ireland, situated at the mouth of the river Blackwater, in the eastern part of the county. Youghal is an ancient corporation, and sends a member to the united parliament. It is one of the towns belonging to the duke of Devonshire, as heir of the eldest branch of the Boyle family. It has a considerable corn trade, and is much frequented for bathing. There is a collegiate church, the wardenship of which is united to the see of Cloyne. Youghal is 115 miles S.W. from Dublin, and 25 E. from Cork.

YOUHIOGENY, a river of America, which rises in the north part of Virginia, and runs into the Alleghany, at Pittsburgh.

YOVIS, a town of Africa, in the county of Whidah; 9 miles E.N.E. of Sabi.

YOULE, a river of Madagascar, which runs into the sea on the west coast, S. lat. 20° 20′. E. long. 44° 40′.

YOUNG, EDWARD, in *Biography*, a celebrated poet and clergyman of the established church, was born at his father's living of Upham, in Hampshire, in 1684, and removed from Winchester school to New college, in the university of Oxford in 1703, and afterwards to Corpus Christi college. In 1708 he obtained a law-fellowship at All Souls by the patronage of archbishop Tenison, and at this time poetry was the chief object of his pursuit. His first performance in this department was "An Epistle to Lord Lansdown," one of the twelve peers created at the same time in 1712; and this was followed in the next year by his "Last Day," to which he prefixed a dedication to queen Anne, extolling the peace of Utrecht. From this circumstance he was regarded as a court-writer with a fixed stipend, under which character Swift alludes to him in his "Rhapsody on Poetry:"

"Where Y—— must torture his invention
To flatter knaves, or lose his pension."

 His

His next production was "The Force of Religion, or Vanquished Love," founded on the story of lady Jane Gray; and in 1714 he inscribed a poem on the death of the queen and the accession of George I. to Addison, who was then secretary to the lords justices. In 1719 he became tutor to the eldest son of the earl of Exeter; but soon abandoning that connection by the solicitations of the duke of Wharton, he graduated doctor of civil laws in this year, and wrote his tragedy of "Busiris, King of Egypt," which was dedicated to the duke of Newcastle, and favourably received; and in the same year he dedicated in a very complimentary strain to lord chancellor Parker, his poetical "Paraphrase on Part of the Book of Job." In the year 1721 his tragedy, "The Revenge," was exhibited with great applause, and dedicated to the duke of Wharton, whom he avows as his peculiar patron, and from whom he received some pecuniary favours. His satires, entitled "The Love of Fame, or the Universal Passion," were separately published, from 1725 to 1728, and as they became popular, he derived from them considerable profit. In 1726 he addressed his poem, entitled "The Instalment," to sir Robert Walpole, on his receiving the honour of the Garter; and he availed himself, on the accession of king George II., of his recommending an attention to the navy, to compose two odes, one inscribed "To the King, Pater Patriæ," introducing another under the title of "Ocean." Having attained his 44th year, he took orders, and in 1728 was nominated one of the royal chaplains; and this change of his views and pursuits induced him to withdraw from the stage his tragedy of "The Brothers," which was under rehearsal. His next publications were adapted to his new profession; and among these were his "True Estimate of Human Life," exhibiting the dark side of the picture; and a sermon preached before the house of commons on the 30th of January, entitled "An Apology for Princes, or the Reverence due to Government;" a subject not unappropriate to his situation as royal chaplain. In 1730, Dr. Young was presented by his college to the rectory of Welwyn, in Hertfordshire; and in the following year he married lady Elizabeth Lee, widow of colonel Lee, and daughter of the earl of Lichfield. Before this time he had resumed his poetical pen, and written "Imperium Pelagi, a Naval Lyric;" "Two Epistles to Mr. Pope, concerning the Authors of the Age;" and "The Sea-Piece," in two odes, dedicated to Voltaire. By his wife, who died in 1741, he had one son; and this circumstance, together with some other domestic losses that occurred about the same period, increased that melancholy and depression of mind to which he was constitutionally inclined. When he married lady Lee, she had a son, and also two daughters, the eldest of whom, denominated by him Narcissa, falling into a decline, went to the south of France, and died at Lyons in 1736. Her husband, Mr. Temple, supposed to be the poet's Philander, died in 1740; and his own lady died in 1741. If he referred to these events in the annexed lines, he must have taken a chronological licence hardly allowable even to a poet:

"Insatiate archer! could not one suffice?
Thy shaft flew *thrice*, and *thrice* my peace was slain;
And *thrice*, ere *thrice* yon moon had filled her horn."

It is certain that he began to write his "Night Thoughts" in the year 1741; and the occasion, as he declares, was real, and not fictitious. The seventh of these poems is dated in 1744, and the interval must have been occupied in the composition of them. Notwithstanding the sublime strains in which the author expresses his pious feeling, he is not regardless of the patronage of distinguished persons, for to such he inscribes them. On this work Dr. Young bestowed much attention and labour, and he valued it as the chief of his productions. Among his other works, we may mention a poem written as an expression of his loyalty in 1745, and entitled "Some Thoughts occasioned by the present Juncture, inscribed to the Duke of Newcastle;" "The Centaur not fabulous, in Six Letters to a Friend, on the Life in Vogue," an overcharged picture of the existing manners; and "A Sermon preached before their Majesties," with a dedication to the king, 1758. Dr. Young, notwithstanding his genius and piety, and his solicitude to obtain preferment, seems to have been disregarded; and though archbishop Secker expresses his surprise that he had been overlooked by persons in power, he declines any interference in his favour. It should be recollected, however, that the attention which he paid to Frederick, prince of Wales, during his variance with his father, was not forgotten; nor indeed would his junction of the poetical and clerical character be any recommendation to George II. But the reason of his name's being struck out of the list of court-chaplains on the accession of his present majesty is not known; it is the more unaccountable, as he was soon after appointed clerk of the closet to the princess dowager of Wales.

In his retreat at Welwyn he maintained a respectable and dignified character; and though the cast of his mind seems to have been gloomy, he was an agreeable and lively companion. The close of his life, however, was rather disconsolate than cheerful. The conduct of his only son, supposed to be the Lorenzo of the Night Thoughts, who is said to have been a rake and free-thinker, afforded him renewed opportunities for reproof and sarcasm, and must have been the occasion of poignant grief; though Mr. H. Croft vindicates his character, alleging that he was only eight years old when his father began that poem. But others have asserted that he was alarmed and grieved on his account; and that, notwithstanding the favourable change which took place in his sentiments and character, his father would not admit him to any interview in his latter years: and even on his death-bed he refused to see him, though he assured him of his forgiveness, and made him his heir. Towards the close of his life, he surrendered himself to the influence of a housekeeper, and from some mismanagement in his concerns, and a growing disposition to avarice, he became irritable in temper and depressed in spirits. His last production was a poem, entitled "Resignation," printed in 1762, which indicated the decline of his mental powers. His life was prolonged to the year 1765, and he then died in his 84th year. He was interred in the church of Welwyn, and his son erected a monument near the remains of both his parents.

Dr. Young is known principally, if not wholly, as a poet; and his compositions in this department are distributed into satires, tragedies, and night thoughts. His satires are founded on the questionable principle, that the love of fame is the universal passion of mankind; and as he did not excel in judgment, they are exercises of wit and invention rather than grave exposures of vice and folly. As a dramatic writer, he is charged with not understanding or not adhering to nature, and with indulging his imagination and feeling, and running into exaggeration of character and bombast of expression. The only tragedy that has kept possession of the stage is his "Revenge," the Zanga of which is said to have no competitor for theatric effect

effect among the perſonages of modern tragedies. His "Night Thoughts" are deemed original in deſign and execution. Whatever were the cauſes that produced them, they are adapted to excite devout feeling, and to produce moral effect, though they are juſtly complained of as in ſome places unintelligible, and as affording too much ſcope for criticiſm. To many readers, the theology on which they are founded and which they expreſs is too awful and ſevere, and not ſo well calculated to ſooth and pacify the human mind under trouble as the gentler and more conſolatory dictates of Chriſtianity. They are ſometimes tedious and prolix. They will never be neglected as long as taſte and ſuſceptibility of virtuous and religious impreſſions remain. The lyric attempts of Dr. Young are ſaid to have been ſingularly unfortunate. From the edition of his works publiſhed in his life-time in 4 vols. 8vo., he himſelf excluded ſeveral compoſitions which he thought of inferior merit. Biog. Brit. Croft's Life of Young in Johnſon's Engliſh Poets. Gen. Biog.

Young, Patrick, (*Patricius Junius*, Lat.), an eminent ſcholar, was born in 1584, at the ſeat of his father, ſir Peter Young, who had been co-tutor with Buchanan to James VI. of Scotland, at Seaton in Lothian. Educated in the univerſity of St. Andrew's, and accompanying his father in the ſuite of king James, he was employed for ſome time as librarian and ſecretary, by Dr. Lloyd, biſhop of Cheſter. In 1605 he aſſumed the degree of M.A. which he had before taken at St. Andrew's, and entering into orders, became chaplain at All Souls' college. During his reſidence at Oxford he occupied himſelf in the ſtudy of eccleſiaſtical hiſtory and antiquities, and alſo the Greek language; and upon his removal to London, he obtained a penſion of 50*l*. a year, and was occaſionally employed by the king and perſons in power in writing Latin letters. His patron was Montagu, biſhop of Bath and Wells, who procured for him the appointment of librarian to the king. In 1617 he was introduced at Paris, by the recommendation of Camden, to the learned men of that city; and upon his return, he aſſiſted Thomas Rhead in making a Latin verſion of the works of king James. In 1620 he married, and afterwards was advanced to ſeveral preferments in the church; and ſucceeded Rhead in 1624 as Latin ſecretary. Unknown by any publication, he was nevertheleſs honoured as a perſon of diſtinguiſhed literature, who rendered acceptable and uſeful ſervices to learned men. In this way, he was the coadjutor of Selden in the examination of the Arundelian marbles; and when they were publiſhed by this celebrated antiquary, he dedicated the work to Young. He was alſo employed in collating the Alexandrian MS. of the Bible with other copies; and as the reſult of his labours, he communicated many various readings to Grotius, Uſher, and other perſons. It was his intention to have edited a fac-ſimile of this MS., but his deſign was never executed. He publiſhed, however, in 1633, from this MS. the "Epiſtles of Clemens Romanus," and he propoſed editing the curious MSS. from the king's library; but the civil wars, and the ſeizure of the royal library, prevented the accompliſhment of his purpoſe. During the troubles of this period, he ſought an aſylum with a ſon-in-law, at Bromfield in Eſſex, where he died in 1652.

Young is ſaid to have indulged to exceſs a diſpoſition to oblige, which led him to lend valuable MSS. belonging to the royal library to foreigners and others; and he has been charged with betraying his truſt, by not returning MSS. which he removed to his own houſe in contemplation of the pillage of the library, and theſe were ſold among his other effects. To obviate this imputation, it has been alleged that he purchaſed for himſelf many MSS. from Greeks who viſited this country. Smith's Vit. Erudit. Viror. Gen. Biog.

Young is a name borne by many perſons connected with and remarkable in ſome way or other for uſeful talents in the arts. Charles Young, organiſt of Catharine-cree church, near the Tower, father of three daughters, who were all public ſingers: Cœcilia, the eldeſt, was an élève of Geminiani, ſpoke Italian well, ſung in many of Handel's later operas, and was afterwards married to Dr. Arne; the ſecond Miſs Young, Iſabella, was married to the ingenious and excellent compoſer Mr. Lampe, who ſet the Dragon of Wantley; and the third Miſs Young, Eſter, afterwards Mrs. Johes, ſung on the ſtage at Covent-Garden theatre to the time of their deaths. Charles, the father of theſe ladies, was, we believe, the ſon of Anthony Young, a muſician and muſic-ſeller in St. Paul's church-yard, commonly called Tony Young, who has been ſaid by ſome of the family to have ſet "God ſave great George our King." But at the time of the rebellion of 1745, when this air was revived, which Dr. Arne's mother aſſured us was written and ſet for king James II., when the prince of Orange was hovering over the coaſt previous to the Revolution; no claim was then made by the deſcendants of Anthony Young, or of any other compoſer of this air, which no one durſt ſing or own after the abdication of king James, without incurring the penalty of treaſon to king William; ſo that the ſong or hymn lay dormant, and the author concealed for near ſixty years, before it was applied to king George II.

There is a quibbling glee in the firſt volume of Purcell's catches on two perſons of the name of Young, father and ſon, who lived in St. Paul's church-yard; the one was an inſtrument-maker, and the other an excellent performer on the violin:

"You ſcrapers that want a good fiddle well ſtrung,
You muſt go to the man that is old while he's Young,
But if this ſame fiddle you fain would play bold,
You muſt go to his ſon, who'll be Young when he's old.
There's old Young and young Young, both men of renown,
Old ſells, and young plays, the beſt fiddle in town;
Young and old live together, and may they live long,
Young to play an old fiddle, old to ſell a new ſong."

Another Young, of the ſame family, the proprietor of a muſic-ſhop in St. Paul's church-yard till the middle of the laſt century, had a relation, an excellent performer on the violin, known by the name of *Chin*-Young, from the length of that feature, who led at almoſt all the concerts within Temple-bar, particularly at the Blue-coat ſchool chapel, Chriſt's hoſpital, on a Sunday evening, where there uſed to be a performance of ſacred muſic.

Miſs Young, afterwards the hon. Mrs. Scot, and her ſiſter Mrs. Bartleman, both public ſingers, ſeem to have been the laſt remains of the muſical family of Young.

Young. See Generation, Conception, Gestation, Embryo, Fœtus, Delivery, Child, &c.

In the army, that regiment, or officer, is ſaid to be the *younger*, *junior*, which was laſt raiſed, or whoſe commiſſion is of lateſt date, whatever be the age of the man, or however long he may have ſerved in other capacities.

Young *Plantations, Securing and Sheltering of*, in *Rural Economy*. See Plantation and Sheltering.

Young *Frederick's Iſland*, in *Geography*, a ſmall iſland among Queen Charlotte's iſlands, in Port Ingraham.

Young *Nick's Head*, a cape on the eaſt coaſt of New Zealand, ſo called from Nicholas Young, a boy on board the

the Endeavour, who difcovered it in 1769. It forms the fouth-weft point of Poverty bay.

Young *Point*, a cape on the eaft coaft of St. Vincent. N. lat. 13° 12′. W. long. 61° 9′.

Young's *Ifland*, a fmall ifland near the fouth coaft of the ifland of St. Vincent; 2 miles S.E. of Kingfton bay.

YOUNGE, Nicholas, in *Mufical Hiftory*, an Italian merchant, the editor of "Mufica Tranfalpina," 1588; Madrigales of four, five, and fixe parts, chofen out of divers excellent Authours; with the firft and fecond part of La Virginella, made by Maifter Bird upon two Stanzas of Ariofto, and brought to fpeak Englifh with the reft. The editor having opportunities of obtaining from his correfpondents the neweft and beft compofitions from the continent, had them frequently performed at his houfe, for the entertainment of his mufical friends.

The fecond collection of the fame kind was publifhed by the fame editor in 1597; in which, among others, there are three madrigals by Crou, three by Luca Marenzio, and fix by the elder Ferrabofco. Thefe two collections being felected from the works of Paleftrina, Luca Marenzio, and other celebrated mafters on the continent, feem to have given birth to that paffion for madrigals which became fo prevalent among us afterwards, and which the compofers of our own country endeavoured with fuch zeal to gratify.

If allowance be made for the wretched ftate of lyric poetry in England at the time the madrigals publifhed in Younge's two collections were tranflated, which was long before the publication of the fonnets of Spenfer or Shakfpeare, the undertaking feems to have been tolerably executed. Indeed, fometimes with fuch care and felicity as to transfufe the expreffion of the original words into that of the verfion. The Italians themfelves, at this time, had but little melody or rhyme in their mufic; but their poetry having been long cultivated, and brought to a much greater degree of perfection than ours could then boaft, it indicated to the mufical compofer traits of melody, more airy and marked, perhaps, than we could derive from the profody or phrafeology of our own language. The tranflator of thefe madrigals, whoever he was, for the editor does not tell us, feems in general to have imitated the original Italian meafure and ftructure of verfe, as well as ideas; and though they abound with *concetti*, to which not only Italian poets, but thofe of all the reft of Europe were then fo much addicted, the general tafte of the times was indulged in poetry as well as mufic, and metre and melody were at once furnifhed with new models.

However, the perpetual double rhymes in Italian madrigals and fonnets have fo much diftreffed our tranflator to fupply them in Englifh, that, as the prefervation of the original mufic obliged him to render his verfion *totidem fyllabis*, his embarraffments on this account are fometimes truly ridiculous. It feems as if the conftant double rhymes in Italian poetry, which throw the accent on the penultima, inftead of the final fyllable, of a verfe, gave a peculiar caft to the melody in which it is clothed, and rendered it fpecifically different from that of Englifh fongs, in which but few double rhymes occur. The conftant and regular mixture of mafculine and feminine rhymes in French poetry may likewife have had a latent effect on the vocal melody of France, different from that of the other two neighbouring nations. But, after mentioning thefe fufpicions, we fhall leave the further inveftigation of fo fubtle a fubject to philofophers, not only poffeffed of the neceffary knowledge, but an equal zeal for the cultivation of philology, poetry, and mufic. No. 7, in Younge's fecond publication of Italian madrigals Englifhed, in which the old Saxon termination of the prefent tenfe of the indicative mood of our verbs is conveniently preferved, was doubtlefs not thought the worft, as it is applied to feveral compofitions in the collection.

"In vayne he feeks for beauty that excelleth,
That hath not fene hir eyes where love fejorneth,
How fweetly here and there the fame fhe turneth.

He knows not how love heateth, and he quelleth,
That knows not how fhe fighes, and fweet beguileth,
And how fhe fweetly fpeakes, and fweetly fmileth."

Thefe madrigals were celebrated, nearly forty years after their publication, by Peacham, who has pointed out the peculiar excellence of feveral, particularly thofe of Luca Marenzio, which, he fays, "are fongs the mufes themfelves might not have been afhamed to have compofed;" and of thofe by Alfonfo Ferrabofco, the father, he fays, "they cannot be bettered for fweetnefs of ayre and depth of judgment." Upon the ditty (words) of one of thefe, "I faw my Ladie weeping," (he fays) Mafter Byrd and Alfonfo, in a friendly emulation, exercifed their invention." The words of the Nightingale, and Fayre Sufanna, were fo much admired, that they feem to have been fet by all the beft compofers of the times. A few lines of each will perhaps convey to the reader an adequate idea of the poetical beauty of thefe favourite fongs.

The Nightingale.

"But my poore hart with forrowes over-fwelling,
Through bondage vyle, binding my freedom fhort,
No pleafure takes in thefe his fports excelling,
Nor of his fong receiveth no comfort."

Fayre Sufanna.

"To them fhe fayd, if I, by craft procur'd,
Do yeld to you my body to abufe it,
I lofe my foule; and if I fhall refufe it,
You will me judge to death reproachfully.
But better it is in innocence to chufe it,
Then by my fault t'offend my God on hye."

Indeed, in more than twenty fets, publifhed between the years 1588 and 1624, during a period of near forty years, including almoft four hundred and fifty madrigals and fongs in parts, it would be difficult to find any one of which the words can be perufed with pleafure. The fonnets of Spenfer and Shakfpeare, many of which are worthy of their authors, were indeed not publifhed till about the end of the fixteenth century; but afterwards, it is wonderful, that, except one by Shakfpeare, none of them were fet by our beft mufical compofers of their time.

YOUNGOULE, in *Geography*, a fea-port town, on the weft coaft of the ifland of Madagafcar. S. lat. 23° 30′. E. long. 47° 4′.

YOUNGSTOWN, a townfhip of the ftate of Ohio, in the county of Trumbull, with 773 inhabitants; 66 miles N. of Pittfburgh.

Youngstown, an inconfiderable fettlement called a village in Cambria, Niagara county, and ftate of New York, 1 mile from Fort Niagara, and 6 from Lewifton, containing about fix or eight houfes.

YOUNKERS, among *Sailors*, are the *younger* failors, otherwife called *foremaft-men;* whofe bufinefs is to take in the top-fails, furl the fails, fling the yards, &c.

YOURE, in *Geography*. See Ure.

YOURI, a town of Africa, in the kingdom of Cafhna. N. lat. 16° 15′. E. long. 11° 2′.

YOUTH,

YOUTH, *Adolefcence*. See AGE and ADOLESCENCE.

The renovation of youth has been much fought after by chemical adepts; and many of them pretended to various fecrets for this purpofe: but unluckily the death of the pretenders proved a fufficient refutation of their doctrine. Paracelfus talks of the mighty things he could do with his *ens primum;* and even Mr. Boyle tells us fome ftrange things about the *ens primum* of balm. (Boyle's Works abr. vol. i. p. 75.) But Mr. Boyle gives thefe wonderful ftories on the credit of a French chemift, and not on his own.

YOUTH, *Juventus*, or *Juventas*, in the *Pagan Theology*, a goddefs worfhipped among the Romans, who, together with the gods Mars and Terminus, kept her place in the Capitol along with Jupiter, when the other deities were turned out: whence the Romans drew a lucky omen for the durablenefs of their empire. Mem. Acad. Infcrip. vol. i. p. 71. feq.

This ftate of life was, by the ancients, compared to autumn. In which fenfe, Horace fpeaking of one approaching to puberty, fays,

" ——— Jam tibi lividos
Diftinguet autumnus racemos,
Purpureo varius colore."

The moderns, on the contrary, when they fpeak of one in the autumn of his age, mean one that is upon the decline; and choofe rather to ufe the comparifon of the fpring, to denote youth.

YOWRY, in *Geography*, a fmall ifland in the Eaft Indian fea, near the north coaft of New Guinea, on which a nutmeg-tree was found growing by captain Forreft. S. lat. 15′. E. long. 130° 45′.

YPAWA, a river of Bohemia, which runs into the Elbe, near its fource.

YPERLEE, a river of France, which rifes near Ypres, and runs into the canal of Nieuport.

YPOLOTE, a town on the E. coaft of the ifland of Paraguay. N. lat. 8° 46′. E. long. 118° 21′.

YPRES, or IPRES, a city of France, in the department of the Lys, fituated on the river Yperlee, from whence it takes its name. Before the year 800, it was only a château, which was facked and ruined by the Normans. Baldwin III. comte of Flanders, repaired the château, and built a town about the year 960, which was afterwards enlarged by Thierry, comte of Flanders, and Ferrand, the fon of Sanchez, king of Portugal. In the year 1325, the inhabitants revolted with moft part of the neighbouring towns againft Louis de Nevers, comte of Flanders, and pulled down the old wall to build a new one, in which they inclofed the fauxbourgs, which had become fo extremely populous, from weavers and other tradefpeople, that in the year 1242, the number of perfons amounted to 200,000. In the 14th century, the inhabitants of Ypres, for the moft part weavers, were exceedingly troublefome to their neighbours, being unwilling that any people fhould carry on trade befides themfelves. In the year 1383, the rebels of Ghent, affifted by the Englifh, under the command of the bifhop of Norwich, befieged this town with great vigour for fix weeks, but were compelled to retire; and the Englifh being obliged to quit Flanders, Philip the Hardy, duke of Burgundy, having become mafter by a marriage with the heirefs of the late comte Louis, enlarged it, and furrounded it with walls. It was erected into a bifhopric under the archbifhop of Malines, by pope Paul IV. in the year 1559. The town-houfe is a very large building, forming a fquare, and is faid to have been built by the Englifh, 600 feet in front; it has a very handfome tower, in which were kept their public archives from the year 1342. Befides the cathedral, it has feveral other churches, and fome religious houfes. The inhabitants carried on formerly a great trade in woollen cloth, but by the feverity of the duke of Alva, the principal manufacturers were driven to England, from which time that branch of trade declined. At this time they carry on a confiderable manufacture of linen of excellent fabric; 4 miles N.W. of Lifle. N. lat. 50° 48′. E. long. 2° 53′.

YPSILOIDES, ὑψιλοειδής, in *Anatomy*, the third genuine future of the cranium; thus called from its refembling a Greek *y*, or upfilon.

Some alfo call it λαμβδοειδής, *lambdoides*.

There is alfo a bone at the root of the tongue, called *ypfiloides*, and *hyoides*. See HYOIDES.

YQUETAYA, in *Natural Hiftory*, a plant growing in Brafil, long ufed as a medicine in that country; and lately difcovered to the Europeans by a French furgeon.

It has been fince found in France; where, being cultivated and examined by Marchant, it appears to be no other than the common water-betony, or fcrophularia aquatica.

It has this remarkable property, that it takes away from fena all its ill tafte and fmell; which property of correcting the infufion of fena was before wholly unknown.

To ufe this plant, it muft be dried ten or twelve days in the fhade, and afterwards expofed to the fun, till quite dry.

YRAME, in *Geography*, a town of Arabia, in the province of Yemen; 100 miles N.N.E of Aden.

YRIARTE, *Don* JOHN DE, in *Biography*, was born in the Ifle of Teneriffe in 1702, and having completed his education at Paris and Rouen, fettled at Madrid; where he occupied feveral literary offices, and particularly that of librarian to the king. His life terminated, to the regret of thofe who knew his worth, in 1771. Among his learned works, the principal are, "Palæographia Græca," 4to.; "Mifcellaneous Pieces in Spanifh, with Latin Poems," 2 vols. 4to.; "A Catalogue of Greek MSS. in the Royal Library;" and "A Catalogue of Arabic MSS. in the Efcurial," 2 vols. fol. Nouv. Dict. Hift.

YROUER, in *Geography*, a town of France, in the department of the Yonne; 5 miles S. of Tonnerre.

YRSEE ABBEY, a princely abbey of Germany, in the circle of Swabia, founded in the year 1182. The territory includes the village of Yrfee, and feven others. In 1802, this abbey was given among the indemnities to the elector of Bavaria; 3 miles N.W. of Kaufbeuren.

YRVILLAC, a town of France, in the department of the Finifterre: 3 miles S. of Landerneau.

YRUN, a town of Spain, in Guipufcoa; 2 miles S of Fontarabia.

YRVON, a river of Wales, in the county of Brecknock, which runs into the Wye, at Builth.

YS, in *Ichthyology*, a name given by Athenæus, and fome other of the Greek writers, to the fifh called *mus* and *fus* by others. It is the caprifcus of later writers. See GOAT-*Fifh*.

YSAMBRA, a word ufed by fome as a name for hellebore, and by others to exprefs a fpecies of poifon prepared in Spain, of which hellebore is an ingredient.

YSARD, in *Zoology*, a name given to the chamois.

YSCHE, in *Geography*, a river of France, which runs into the Dyle, 6 miles S. of Louvain.

YSENDYCK, or ISENDYCK, a town and fortrefs of Flanders, fituated on the fide or arm of the Scheldt, called the

the Blie: it was built near a town called Gafterneffe, fwallowed up by an inundation of the fea fome centuries ago, whofe inhabitants came to eftablifh themfelves at this place. The Dutch made themfelves mafters of it in the year 1604, and fince that time it has been ftrongly fortified, which is much affifted by its fituation, being furrounded by moraffes, which they can lay under water at pleafure; 8 miles E. of Sluys. N. lat. 51° 21'. E. long. 3° 28'.

YSIPORTAM, in *Ancient Geography*, a place of Afia, in Armenia, which had a Roman garrifon.

YSNI, in *Geography*. See Isny.

YSOPUS, a term ufed by fome to exprefs the chemical art of feparation.

YSPAR, a name by which fome of the chemical writers call iron.

YSSANDON, Jean, in *Mufical Biography*, born at Leffart, in the Compté de Foix, wrote "A Treatife on Practical Mufic, divided in Two Parts." This book is become very fcarce, and deferves to be reprinted. It was firft printed by Ballard in 1582. Laborde.

YSSEL, in *Geography*. See Issel.

YSSENGEAUX. See Issengeaux.

YSTAD, or Ydstad, a fea-port town of Sweden, on the fouth coaft of the province of Schonen, from whence a packet fails to Stralfund. It was formerly well fortified, and contained two churches. The harbour is neither large nor fafe; 26 miles S.E. of Lund. N. lat. 55° 22'. E. long. 13° 44'.

YSTLA, a town of North America, in the province of Mexico.

YSTWITH. See Istwith.

Y-TCHANG, a town of Corea; 35 miles W.N.W. of Kang-tcheou.

Y-TCHUUN, a town of Corea; 15 miles S.S.W. of Ou-tcheou.—Alfo, a town of Corea; 55 miles N. of King-ki-tao.

YTHAN, a river of Scotland, a few miles N. of the Don, that joins the fea, about two miles from Aberdeen, which falls into the German ocean. The Ythan is a ftream formerly celebrated for its pearl fifheries, of which fome relics are now found.

YTHER, a river of Wales, which runs into the Wye, 3 miles N. of Builth.

YTTERON, a fmall ifland in the gulf of Bothnia. N. lat. 63° 4'.

YTTRA Bergon, a fmall ifland on the W. fide of the gulf of Bothnia. N. lat. 61° 48'. E. long. 17° 13'.

YTTRIA, or Ittria, in *Chemiftry*, is a peculiar elementary fubftance ufually confidered as an earth.

Yttria has been hitherto met with in a peculiar mineral named Gadolinite, fo named from profeffor Gadolin, who firft analyfed it, and in Yttro-tantalite, both minerals found only in Sweden. See thofe articles.

Yttria has the appearance of a fine white powder, without tafte or fmell. It does not affect vegetable blues. Its fpecific gravity is confiderably higher than that of the other earths, being no lefs, according to Ekeberg, than 4.842.

Yttria is infoluble in water, yet, like alumina, it is capable, according to Klaproth, of combining with nearly one-third of its weight of that fluid when precipitated from a ftate of folution by the muriatic acid.

In folutions of the pure alkalies it is likewife infoluble; but in the carbonate of ammonia, and indeed in all the alkaline carbonates, it diffolves readily. It combines with acids, and forms with them falts, which, as far as they are known, are defcribed below.

Yttria is not affected by light, and probably does not combine with oxygen. According to the experiments of Klaproth, it does not combine readily with fulphur.

Sir Humphrey Davy found, that when potaffium was paffed through red hot yttria, it was converted into potafh, while grey metallic particles were perceived mixed with the alkali, which were confidered to be the metallic bafis of the earth or *yttrium*. Nothing further, however, is known refpecting this metallic bafis.

The *Salts of Yttria* are but little known. The following only have been examined.

Nitrate of Yttria.—This falt was firft formed by Ekeberg, and has been more lately examined by Vauquelin. It may be prepared by diffolving yttria in nitric acid. The folution has a fweet aftringent tafte, and can fcarcely be made to cryftallize. Expofed to the air, it deliquefces. When fulphuric acid is poured into the folution, cryftals of fulphate of yttria are inftantly precipitated.

Carbonate of Yttria.—This falt may be formed by precipitating yttria from its folution in acids by means of an alkaline carbonate. It is white taftelefs infoluble powder, compofed, according to Klaproth, of

Carbonic acid -	18
Yttria - -	55
Water - -	27
	100

According to Vauquelin, however, it lofes only 32 *per cent.* when calcined.

Phofphate of Yttria.—Vauquelin formed this falt by mixing a folution of the phofphate of foda with the fulphate, nitrate, or muriate of yttria. The phofphate of yttria precipitated in the form of gelatinous flakes.

Sulphate of Yttria.—Sulphuric acid diffolves yttria readily. As the folution proceeds, the fulphate cryftallizes in fmall brilliant grains. Ekeberg ftates thefe cryftals to be flat fix-fided prifms, terminated by four-fided fummits. Dr. Thomfon obtained thefe in the form of long flender rhomboidal prifms. Their colour is amethyft-red: their fpecific gravity 2.791. They are foluble in about 30 parts of water at 60°. A red heat partly decompofes them. Oxalic acid, pruffiate of potafh, and infufion of nutgalls, occafion a precipitate in the aqueous folution of this falt. It is decompofed by the phofphate of foda. The fulphate of Glucina is readily diftinguifhed from this falt by its being colourlefs, lighter, and more foluble in water. According to Berzelius, the fulphate of yttria is compofed of

Sulphuric acid -	50.0
Yttria - -	50.0
	100.0

Arfeniate of Yttria.—When yttria is diffolved in arfenic acid, and the folution boiled, arfeniate of yttria precipitates in the form of a white powder. Arfeniate of potafh alfo precipitates yttria from acids.

Chromate of Yttria.—Chromic acid diffolves yttria cold in confiderable quantity, and with effervefcence. The folution has an aftringent and pungent tafte, and, like moft of the chromates, has an orange-red colour, paffing into yellow. The folution is quite neutral. When evaporated, it forms minute prifmatic and cubic cryftals. It is very foluble in water.

Acetate of Yttria.—Yttria diffolves readily in acetic acid, and the folution on evaporation yields cryftals of the acetate of yttria, the form of which is ufually that of thick fix-fided plates,

plates, obliquely truncated. Their colour is amethyst-red, and they are not altered by exposure to the air.

Succinate of Yttria.—Yttria is not precipitated from its solution in acids by the succinates, unless the two salts be concentrated, in which case small cubic crystals fall, which are the succinate of yttria.

Oxalate of Yttria.—When oxalic acid, or the oxalate of ammonia, is dropped into a solution of yttria in an acid, a white insoluble powder falls, which is the oxalate of yttria. According to Vauquelin, this salt is composed of

Oxalic acid	57.5
Yttria	42.5
	100

Tartrate of Yttria.—Yttria is precipitated from its solution in acids by the tartrate of potash, but the precipitate is dissolved by the addition of water.

Dr. Thomson infers, from the analyses above-mentioned, and more especially from the analysis of the sulphate and carbonate by Berzelius and Vauquelin, that the combining weight or weight of the atom of yttria is 50, oxygen by 10, and consequently that it is composed of

Yttrium	80
Oxygen	20
	100

and the weight of the atom of yttrium will be 40.

With respect to the salts of yttria in general, it may be said, that many of them are little soluble; that they are capable of being precipitated from acids by the phosphate of soda, the carbonate of soda, the oxalate of ammonia, the tartrate of potash, and the prussiate of potash; and lastly, that the sulphate of yttria may be distinguished from the sulphate of lime by its greater solubility, and by its sweet taste.

YTTRIUM, the metallic basis of yttria. See YTTRIA *supra.*

YTTRO-TANTALITE, in *Mineralogy*, *Tantale yttrifire*, Brongniart, an ore of tantalum, combined with the newly-discovered earth called yttria, and found at Ytterby, near Roslagen, in Sweden. The colour of yttro-tantalite is a dark iron-black; when pulverized it is greyish: it occurs in nodules, about the size of a hazel-nut, and also crystallized in oblique six-sided and four-sided prisms. It occurs also in granular distinct concretions. Its fracture is compact or finely granular, and it has a shining metallic lustre. Yttro-tantalite scratches glass, but yields with difficulty to the knife. The specific gravity of this mineral is 5.13. It decrepitates with the blow-pipe, but at length melts into a greenish-yellow slag. According to Vauquelin, the constituent parts are,

Oxyd of tantalum	45
Oxyd of iron and yttria	55
	100

Yttro-tantalite is nearly allied to gadolinite, the other mineral in which yttria is found, and occurs with it at Ytterby, in a bed of flesh-red felspar in gneiss.

YTZAIMPATLI, in the *Materia Medica*, a name given by some to the cevadilla, or *hordeum causticum*, the *caustic Indian barley*.

YU, in *Geography*, a city of China, of the second rank, in Pe-tche-li; 87 miles W. of Peking. N. lat. 39° 52′. E. long. 114° 14′.—Also, a city of China, of the second rank, in Ho-nan; 442 miles S.S.W. of Peking. N. lat. 33° 22′. E. long. 112° 38′.—Also, a city of China, of the second rank, in Ho-nan; 377 miles S.S.W. of Peking. N. lat. 34° 16′. E. long. 113° 14′.—Also, a river of China, which rises in Ho-nan, 12 miles N. of Pi-yang, and joins the Hoai, 20 miles E.S.E. of Sin-tsai.—Also, a river of China, which rises about 26 miles W. from Ngan-fou, in Kiang-si, and runs into the Kan-kiang, 7 miles N.N.E. of Lin-kiang.

YUCATAN, a province of Mexico: it is a peninsula, surrounded on the W. and N. by the gulf of Mexico, between the bay of Campeachy on the S.W., and that of Honduras on the S.E., having the little province of Tabasco on the S.W., and that of Vera Paz, in the audience of Guatimala on the S., where it is joined on the continent by an isthmus not 120 miles broad. The climate is pretty warm in summer, which begins about April, and ends in September. It rarely rains here during the winter season, though the weather is tolerably cool, except in January and February, which are almost as hot as in the middle of summer. It is, however, very healthy, especially a large mountainous tract, extending from Salamanca on the W., to the eastern boundary, and where the natives live to a great age. The south side of this ridge is ill-peopled, and worse cultivated, for want of water; but the north part is very populous, being rendered pleasant by gentle breezes, though the sun is very hot. The days and nights are nearly equal all the year. The soil when properly cultivated produces great quantities of corn, cotton, and indigo. All sorts of cattle, wild-beasts, honey, wax, and fowls, are here in great plenty; and on the coasts are found large pieces of amber; but as no mines were ever discovered in this country, the Spaniards are not fond of making settlements here, so that it abounds mostly with Indians, subject to the Spaniards, who employ them in making salt, in the bay of Campeachy. This peninsula has very few rivers, but wells without number, and considerable lakes; and wheresoever they dig up the land, abundance of shells are found, which with the lowness of the country, and shallowness of the sea about it, has induced many to think that the greatest part of it was once under water. The capital of Yucatan is Campeachy, in the bay of which, and of Honduras, the former lying on the west, and the latter on the east side of this province, the English cut their logwood.

YUCCA, in *Botany*, is the *Yucca*, *Yuca*, or *Jucca*, of the original inhabitants of America. Gerarde appears first to have published this name in England. Caspar Bauhin follows him. Linnæus, *Phil. Bot.* 164, lays to the charge of Tournefort the introduction of *Yucca*, as a scientific generic appellation, but we do not find it in his work. Dillenius however adopts it in his *Nova Genera*, and *Hortus Elthamensis*, and Linnæus rather overlooks than approves of the barbarism.—Linn. Gen. 170. Schreb. 226. Willd. Sp. Pl. v. 2. 183. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 2. 291. Pursh 227. Juss. 49. Poiret in Lamarck Dict. v. 8. 824. Lamarck Illustr. t. 243. Gærtn. t. 85. (Yuca; Dill. Nov. Gen. 111. t. 5. Ponted. Anthol. 294. t. 6. f. N, O. Cordyline; Van Royen Lugd.-Bat. 22.)—Class and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Lilia*, or perhaps *Bromeliæ*, Juss.

Gen. Ch. *Cal.* none. *Cor.* bell-shaped, in six deep, ovate, very large, equal, moderately spreading segments, connected by their claws. Nectaries none. *Stam.* Filaments six, inserted into the base of the corolla, very short, swelling upwards, reflexed; anthers minute, roundish. *Pist.*

Germen superior, oblong, bluntly triangular, with six furrows, rather longer than the stamens; style none; stigma obtuse, with three furrows, its lobes cloven, the centre pervious. *Peric.* Berry oblong, bluntly hexagonal, fleshy, perforated at the summit, of six cells; three of the partitions thicker than the three intermediate ones. *Seeds* very numerous, in a single row, separated from each other by transverse membranes, roundish-obovate, flat, depressed, attached, by their pointed base, to the inner angle of the cell.

Eff. Ch. Corolla inferior, bell-shaped, its segments without nectaries. Stamens club-shaped. Style none. Berry hexagonal, of six cells. Seeds numerous, flat.

Obs. We have, like Schreber, adopted Gærtner's idea of the fruit, which Linnæus does not appear to have seen in perfection, and which Dillenius confesses himself to have judged of from the unenlarged *germen* only. Analogy might well lead these authors to presume it a *capsule*, which, from the structure of the *germen*, might be judged to consist of three cells. This idea was moreover supported by an account which Ray had somehow obtained from the East Indies; where indeed no *Yucca* grows wild, and therefore this account cannot implicitly be trusted. Gærtner received, from professor Hermann of Strasburg, the ripe fruit of *Yucca draconis;* and this being the only authentic instance of the seed-vessel of any one of the genus passing under the investigation of a critical botanist, we must rely on it as affording the only certain type of the genus in this particular. Jussieu appears to have followed Linnæus; but the discovery of the true nature of the fruit, rather favours his opinion above-mentioned, of the affinity of *Yucca* to his *Bromeliæ*. This is a handsome perennial genus, more or less caulescent, with numerous, long, simple, rigid or coriaceous, pungent *leaves;* and copious, panicled, white, liliaceous, very elegant though generally inodorous *flowers*. Some of the species are tolerably hardy in our gardens, but they do not very readily or constantly blossom.

1. Y. *gloriosa*. Common Adam's-needle. Linn. Sp. Pl. 456. Willd. n. 1. Ait. n. 1. Pursh n. 4. Curt. Mag. t. 1260. Andr. Repos. t. 473. (Y. sive Jucca, peruana; Ger. Em. 1543. Yuca indica, foliis aloes, flore albo; Barrel. Ic. t. 1194.)—Caulescent. Leaves lanceolate, straight, furrowed; their edges smooth and entire.—Native of Peru and North America. On the sea shore of Carolina, flowering in July and August; the whole plant about ten feet high. *Flowers* white. *Pursh.* The *stem* in our gardens is seldom two feet in height, somewhat branched, thick, tough, crowned at the summit of each branch, if divided, with a profusion of crowded *leaves*, spreading in every direction, each a foot and a half or two feet long, tapering to a hard spinous point; contracted in the lower part, but dilated at the very base, where they half clasp the stem: their upper surface is of a fine green, smooth, furrowed longitudinally, especially towards the end; the under paler, and more even; the edges quite even and smooth. *Panicle* terminal, compound, erect, composed of perhaps an hundred drooping *flowers*, not much inferior in size and beauty to those of the White Water-Lily, but more cream-coloured, tinged at the base and points with crimson, destitute of scent. Partial *stalks* about an inch long, round, smooth, with a pair of membranous *bracteas* at the base. *Stigma* in three distinct, spreading, cloven lobes. We cannot but think, notwithstanding Mr. Ker's opinion, that Andrews's figure belongs to this species, and not to *aloifolia*. This is evinced by the furrows and margin of the *leaves*, as well as by the structure of the *stigma;* though we must allow the whole representation to be less happy and characteristic than that in the Magazine.

2. Y. *recurvifolia*. Drooping-leaved Adam's-needle. Salisb. Parad. t. 31. Pursh n. 3.—Caulescent. Leaves linear-lanceolate, furrowed, recurved and drooping; their edges at length somewhat filamentous.—Native of the sandy shores of Georgia, where it was found by M. Leconte, flowering in July and August. The *flowers* are of a greenish-yellow, with a tinge of purple. *Stem* about three feet high. *Pursh.* This species is recorded in the *Paradisus Londinensis*, as having flowered, in the late Mr. Swainson's garden at Twickenham, in 1805; yet it is not admitted by Mr. Dryander, or Mr. Aiton, into the *Hortus Kewensis*, or its *Epitome*. The *flowers* are said by Mr. Salisbury to have a strong smell, mixed with something like a citron flavour. The three inner segments of the *corolla* are a little the broadest. *Stigma* most like the last. The edges of the *leaves* split off in a few disjointed filaments, in the manner of *Y. filamentosa*, though far less remarkably. We have seen no specimen. Mr. Pursh having observed this, as well as the *gloriosa*, in a living state, in North America, chiefly induces us to admit it into our list of species; garden plants being always less to be trusted in any doubtful question.

3. Y. *aloifolia*. Aloe-leaved Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 2. Ait. n. 2. Pursh n. 5. Curt. Mag. t. 1700. (Y. arborescens, foliis rigidioribus rectis serratis; Dill. Elth. 435. t. 323.)—Caulescent. Leaves linear-lanceolate, even, straight; their edges bordered with fine callous notches.—Native of South America, according to most authors; of the coast of Carolina and Florida, flowering in August. *Pursh.* It was introduced, more than a hundred years ago, into the English and Dutch gardens, and is generally treated as a green-house shrub, though said to succeed and flower better, in mild seasons, in the open ground. The *stem* is generally simple, and rises to the height of fifteen to eighteen feet, even in our conservatories, being for the most part naked, round, three or four inches in diameter, marked with scars where leaves have been. The upper part, for the space of a foot or more, is thickly beset with *leaves*, spreading in every direction, the lower ones pointing downwards, the upper ones nearly upwards, a few in the middle only being horizontal. The *leaves* are all straight, narrower and stiffer than in *Y. gloriosa*, and distinguished by their crenate edges, as well as even surface. The *panicle* also is more dense and cylindrical, from two to three feet high. *Flowers* white, externally tinged with purple. *Stigma* abrupt, of three shorter, less dilated and spreading, lobes. Mr. Ker truly remarks, in the Botanical Magazine, that this species will thrive for many years with very little earth, in pots not more than a foot deep. Its flowering is a rare occurrence, and after that event, the head decays at the top, throwing out lateral shoots, and the plant becomes branched; but its elegant simplicity is destroyed, and we believe no more flowers, at least in our gardens, are ever produced.

4. Y. *draconis*. Drooping-leaved Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 3. Ait. n. 3. (Y. draconis folio, serrato reflexo; Dill. Elth. 437. t. 324. Tacori; Clus. Exot. 48.)—Caulescent. Leaves linear-lanceolate, even, reflexed, crenate. Segments of the corolla spreading, somewhat recurved.—Native of South Carolina, according to Mr. Aiton, who marks this species as a hardy shrub, flowering in October and November. We have never seen an authentic specimen of the *flowers*, but in the very admirable plate, communicated to Dillenius by his friend Sprekelson of Hamburgh, and published in the Hort. Elth. as above, the *corolla* is represented with more lanceolate, flat, spreading,

ing, and in fome meafure reflexed, fegments, than in any of the foregoing. The *leaves* are defcribed longer, narrower, and thinner than in the laft fpecies, reflexed, being bent downwards, and pendulous, from about the middle, or rather nearer the bafe; they are moreover fhining, of a deeper green, lefs concave, and with longer more flender terminal fpines. They are an inch broad, and above two feet long. Dillenius fays the marginal notches are rather finer than in the laft. The Linnæan fpecific definition implies the reverfe. Commelin's plate in his *Præludia Botanica*, t. 16, exhibits very large and diftant fpinous teeth, at the edges of the *leaves*, fuch as we have never feen, even in young plants. We have therefore refrained from citing this author under the prefent fpecies, as well as his t. 14. of the fame work, and Plukenet's t. 256. f. 4. under the laft; becaufe, though they may be right, fuch figures afford no information or inftruction. Clufius fays the Indians ufe the fibres of the leaves of the fpecies of which we are treating, obtained by maceration and beating, as a fine kind of thread, like flax or filk; and they alfo make ftrong cordage of the fame, for tying the rafters of their huts together. Such qualities merit further inquiry.

5. Y. *filamentofa*. Thready Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 4. Ait. n. 4. Purfh n. 1. Curt. Mag. t. 900. (Y. foliis lanceolatis, acuminatis, integerrimis, margine filamentofis; Trew's Ehret 9. t. 37. Yuca, five Jucca, vera, foliis filamentofis; Morif. fect. 4. t. 23. f. 2.)—Stem none. Leaves lanceolate, entire, coarfely filamentous at the edges.—On the fhores of Virginia and Carolina, and in the weftern parts of the fame countries, flowering in July and Auguft. *Purfh.* A hardy perennial in our gardens, flowering, though not very conftantly, in autumn. The *leaves* are numerous, a foot long, fpreading in the form of a rofe from the crown of the root; their points fpinous, but fhort; their furfaces both ftriated, a little glaucous, rough to the touch with minute harfh prickles; their edges befet with long recurved threads. *Flower-ftalk* folitary, erect, from four to five feet high, round, fmooth, leaflefs, bearing feveral fcattered, oblong, membranous, reddifh-brown *bracteas*, fuch as alfo accompany the partial ftalks. *Panicle* compound, lax and fpreading, of numerous large and handfome, pendulous, cream-coloured, bell-fhaped *flowers*, reprefented of much too yellow a hue in the Botanical Magazine. Their fegments are taper-pointed. *Filaments* rough, or glandular, with very fmall *anthers*. *Stigma* with fpreading, fomewhat recurved and cloven, lobes, like *Y. gloriofa*.

6. Y. *anguftifolia*. Narrow-leaved Dwarf Adam's-needle. Purfh n. 2.—Stem none. Leaves linear, elongated, rigid, fparingly filamentous at the edges. Fruit obovato-cylindrical.—Gathered by Mr. Nuttall, on the banks of the Miffouri, flowering in July and Auguft. Perennial. *Leaves* very narrow. *Stalk* from two to three feet high. *Fruit* large. *Purfh.* This appears not yet to have been brought to England.

The name of *Yucca* may be found applied, by the older botanifts, to feveral plants which have no botanical affinity to the prefent genus; fuch as Morifon's fect. 4. t. 23. f. 3, where the *leaves* are digitate; and *Jatropha Manihot* of Linnæus. (See JATROPHA.) Such plants agree in the efculent quality of their flefhy *roots*, which when grated and wafhed, yield a farinaceous fubftance, of which the natives of America and the Weft Indies appear to have made a kind of bread, long before our European corn was introduced among them.

YUCCA, in *Gardening*, contains plants of the fucculent, evergreen, fhrubby, hardy, and tender kinds, in which the fpecies cultivated are, the common Adam's-needle (Y. gloriofa), the thready Virginian yucca (Y. filamentofa), the aloe-leaved yucca (Y. aloifolia), and the dragon-tree-leaved yucca (Y. draconis).

Thefe are all fucculent evergreen fhrubby plants, fome of them having a flefhy nature and great regularity of growth.

Method of Culture.—Thefe plants are all capable of being raifed by offsets or fuckers, from the roots and heads of the old plants, as well as by feed.

The offsets and fuckers may be taken off any time in the fpring or fummer feafons, being laid in fome dry place for a few days, till the wounded part caufed by the feparation from the plant is dried and healed over; when they may be planted out feparately in pots of light fandy compoft, and be placed in a fhady fituation till they have taken root in a perfect manner. When affifted by a hot-bed, they often fucceed better.

The feed obtained from abroad fhould be fown in the fpring in pots of light earth, plunging them in a hot-bed, in which the plants foon come up; and when they are two or three inches high, they fhould be pricked out feparately in fmall pots of light fandy mould, replunging them in the hot-bed to forward their growth, affifting them with moderate waterings and frefh air daily, and hardening them by degrees to the full air, fo as to be fet out in June to remain till October, when they fhould be removed into the green-houfe for the winter.

Some plants of all the forts fhould conftantly be preferved in pots.

They are all very ornamental; the two firft after they have been hardened, in the dry borders, where the foil is light, and where the fituation is warm and fheltered; and the others in green-houfe collections, among other potted plants.

YUE, in *Geography*, a city of China, of the fecond rank, in Yun-nan; 1105 miles S.S.W. of Peking. N. lat. 25° 22'. E. long. 103° 22'.

YUEN, a river of China, which runs into the lake Tong-ting, 17 miles E. of Tchang-te.—Alfo, a city of China, of the fecond rank, in Hou-quang; 850 miles S.S.W. of Peking. N. lat. 27° 23'. E. long. 109°.

YUEN-KIANG, a city of China, of the firft rank, in Yun-nan, on the Ho-ti river; 1250 miles S.W. of Peking. N. lat. 23° 37'. E. long. 101° 44'.

YUEN-TCHEOU, a city of China, of the firft rank, in Kiang-fi; 750 miles S. of Peking. N. lat. 27° 50'. E. long. 114°.

YUEN-YANG, a city of China, of the firft rank, in Hou-quang, on the river Han; 517 miles S.S.W. of Peking. N. lat. 32° 50'. E. long. 110° 29'.

YVERDUN, or IFFERTEN, a town of Switzerland, in the Vaudois, and capital of a bailiwick, in the canton of Berne, fituated on the lake of Neufchâtel, otherwife called the lake of Yverdun, at the mouth of the river Orb, which divides into two branches, forming a good port, and an ifland, on which the town is fituated. The two fauxbourgs communicate with the town by bridges. It is ancient, and in the Theodofian table called "Caftrum Ebredunenfe," and "Ebrodunenfe," by which it is underftood to have been a place of ftrength. The Romans maintained here a *præfectus barcariorum*, and there yet exifts a fociety of boatmen, of ancient ftanding, and numerous, who have a particular police, privileges, and laws of navigation. From the Romans it paffed to the kings of Burgundy, and afterwards to the dukes of Zahringen. In the year 1259, it was taken by Peter of Savoy, who reduced it by famine, and it continued in in that family till the year 1536. In this year, the troops of Berne, when they had reduced the reſt of the Vaudois, laid ſiege to this town, and after a few days, became maſters, ſince which Yverdun has been ſubject to Berne. The police is adminiſtered by a great and little council, compoſed of thirty-ſix members, the preſident of whom has the title of *banneret*. It has a large and ſtrong caſtle, flanked with four towers, built in the 12th century, by Conrad, duke of Zahringen: other public buildings are, a college for the inſtruction of youth, an hoſpital, divers magazines, &c. and in the town-houſe is a library, formed not long ſince by contribution. The environs were formerly a moraſs, which has been drained, and is now become good and fertile land. Near the town is a ſulphureous medicinal ſpring, and in the year 1730, a building, for the purpoſe of bathing, was erected by the magiſtrates. In the middle of the laſt century, a company was formed, for the purpoſe of making a navigable canal from the lake of Yverdun to the lake of Geneva, but it was never finiſhed. The bailiwick is one of the moſt conſiderable in the canton of Berne, containing about 25 pariſhes and 20 lordſhips, and is about 15 miles in length. The fertility is moderate: the wine is not of the beſt quality; 34 miles S.W. of Berne. N. lat. 46° 48′. E. long. 6° 14′.

YVES, or Ivo, in *Biography*, biſhop of Chartres, was born in the 11th century, of a noble family, in the territory of Beauvais, and ſtudied theology under Lanfranc, prior of Bec. Being made abbot of St. Quentin, he opened a theological ſchool, which became famous; and having ſuperintended this inſtitution for fourteen or fifteen years, and maintained a regularity among thoſe who attended it conformable to the ancient canons, he was juſtly regarded as one of the chief founders of the order of canons-regular. Upon the death of Geoffrey, biſhop of Chartres, he was choſen as his ſucceſſor, and the election was confirmed by Urban II. in 1091. The diſcipline he maintained in his ſee was exemplary, and in the duties of it he was employed for 25 years, his epiſcopate and his life terminating in 1116. Beſides ſermons, a brief chronicle of the kings of France, and two collections of eccleſiaſtical decrees, he has left 287 epiſtles, from which may be learned the manners of the times in which he lived. Of theſe we have a ſummary by Dupin. A collection of his works was printed at Paris in 1647. His name is highly reſpected in the church of Rome, and pope Pius V. iſſued a bull in 1570, empowering the canons-regular of Latran to celebrate an anniverſary for "the bleſſed Yves." Dupin. Moreri.

YVETOT, in *Geography*, a town of France, in the department of the Lower Seine. This was once a place of conſequence, and the capital of a kingdom; 18 miles N.W. of Rouen.

YUFTS, or *Ruſſia Leather*, as it is called in England, are the chief products of the tanneries in Ruſſia; and the principal places in which they are prepared, next to Moſcow and Peterſburg, are, Arſamas, Koſtroma, Yaroſlaf, Pſcove, Kazan, Vologda, Niſhney-Novgorod, Vladimir, Ekatarinenburg, &c. Mr. Tooke has deſcribed the proceſs by which they are prepared:—The raw ox-hides are firſt laid in running water, or in large tan-pits full of water dug in the earth for that purpoſe, to ſoak for a whole week; but in ſummer not ſo long. During this time they are daily taken out of the water, and ſcraped at a ſcraping-bench, or wooden horſe. Having now been duly ſteeped, they are put into a ley, thus prepared: In other vats, likewiſe dug in the ground, and under cover, they mix two parts of good aſhes with one part of unſlacked lime, in boiling water, and ſink the wet hides in this ley on a grating, which being ſuſpended by cords, can be raiſed or let down at pleaſure. In this vat the hides are laid again for about a week, though in warm weather leſs, in cold perhaps even longer. The ſign that they have lain long enough in the ley, is, that the hair can without difficulty be rubbed off with the hand, ſo that none remains. If the hides, after the expiration of a week, are not in that condition, freſh aſhes are put into the ley, and the ſkin ſunk in it. But if at length the hair be ſufficiently looſe, the hides are entirely taken out of the ley, and all the hair ſcraped off on a ſtretching-block, by means of blunt iron ſcrapers with two handles. The hair is waſhed clean, and ſold for domeſtic uſes. The hides, thoroughly cleanſed from hair, are ſuſpended in vats of clean water on a running ſtream, where they remain three days, diligently turning them to and fro, in order to purge them from the aſhes and ley; afterwards they are hung up, and left to drain. The hides muſt now be ſcraped on the fleſh ſide. To this end they employ either the aforeſaid ſcraping-iron, or others ſharper in various degrees. After this treatment, the hides are trampled. But calves-hides have another ſort of preparation, which the yuft-tanners, in the interior towns of the empire, who moſtly practiſe it, call rakſcha. This preparation is performed with the white excrement of dogs dried, which is diſſolved in boiling water, and to a hundred hides about four vedros full of excrement is the rule. If here the right proportion with the water be not found, the hides corrupt in this ſlime, the object whereof ſeems to be the complete freeing of the ſkin from the ſalts that adhere to it from the ley. The hides are left to lie twice twenty-four hours. With this is ſtirred a ſour gruel of oatmeal with warm water, and to three oſmics, or eighths of a chetverik, three or four vedros of dregs of the common quas, which the people make of meal and a ſmall portion of malt, put in the thin gruel, that it may quickly ſour with the hides. To ten hides, the tanners uſually reckon forty pounds of meal.

After the hides have ſoured, which is done in large vats, they are laid in other vats, and well ſteeped for two or three days in a ſtrong tan-juice, ſok, thoroughly boiled from good bark. When this is done they are brought ſtraight to the tan. In the tan-pits, in which often ſome hundreds of hides are lying, is poured half water and half tan, or water boiled with tan, and a grating is hung in with cords, having one hide after the other ſpread upon it, thick ſtrewed with good fine-pounded tan, and the grating conſtantly let deeper into the pit, till it be nearly full; yet ſo that the tan-liquor is always above the hides, which are then again ſprinkled over with tan. In this tan the hides continue to lie a week; thoſe of full-grown animals longer. On being taken out, they are waſhed and trampled on, which two workmen in a ſummer's day can perform with three hundred hides. The next day they are laid, in the manner above-deſcribed, in freſh tan. Thus they generally get four times ſucceſſively freſh tan, and are every time rinſed clean. In the laſt tan they lie three weeks, or longer, are then finally waſhed, hung up, and, when they have tolerably drained, delivered to thoſe workmen whoſe buſineſs it is, in particular workſhops, to dye, dreſs, and wax the yufts, and to deliver the goods finiſhed. It is to be obſerved, that the Ruſſian yuft-tanners ſeldom uſe oak-tan, and never willingly. The choiceſt and beſt tan is that of the tſchernotal, as they call it, or the black willow; and alſo the young bark peeled off from other ſhrubby willows, which are collected by the boors, dried in bundles, and brought in cart-loads to market. To ten hides, the tanners compute one and a half fathom of theſe bundles of willow-bark,

bark, as they are laid one upon another for fale, through all the tans. It muft not, however, be imagined that the excellence of the Ruffian yufts depends on this; for in Siberia, where are no oaks, and but few willows of any fize, they tan yufts with only birch-bark, which are not much worfe than the Ruffian. The bark is made fmall by either ordinary tan-mills, turned by horfes or by water; or the tanner himfelf, in many towns where there are no mills, caufes it, at unneceffary expence and labour, to be pounded in wooden mortars, or excavated blocks, with peftles, almoft like thofe in the tan-mills, by day-labourers.

The dyeing of the yufts is performed in two ways, and of two colours. The commoneft and moft natural cuftom of giving the colour to the hides is, by fewing them together in pairs, the hair fide inwards, while they are yet moift, round the edges, with rufhes or ftripes of bark, thus forming them into a bag or fack; into this fack the colour is put, the fack well fhook, and the fuperfluous dye let to run out, whereupon the fkins are dried. From this method of dyeing them, it feems to proceed that the yufts are called and taken by pairs. The other procefs, whereby much trouble, time, and colour are faved, and the edges of the fkin entirely preferved, is the following: Each fkin is hung upon a horfe over a long trough, fo that the hair fide, which muft be ftained, appears outwards, pouring the dye upon it out of the dye-kettle, till the whole fkin is dyed. The two colours given to the yufts are red and black. The red dye is thus prepared: Pound brafil-wood (fandal) in the pounding-mill, or with hand-peftles, as fine as the tan, and boil it in kettles. Previous to the dyeing, fteep the fkins in alum-water. It is calculated, that to each fmall yuft-fkin a half, and to a large one a whole pound of logwood is put. But the latter are moftly coloured black. To a hundred yufts to be dyed red, four pounds of alum is fufficient. For dyeing black the brafil-wood is likewife ufed; but in the red dye, to a hundred fkins three pounds of good iron vitriol is diffolved. After the firft tincture the fkins are dried, and afterwards on tables done over again with the fame dye and rolled up, that they may thoroughly imbibe the dye. For heightening the colour this tincture is fometimes thrice repeated. When the fkins are now tolerably dried, by hanging, that the colour may not fade, with the flefh fide outwards, the yufts, ftill fomewhat moift, are fmeared over on tables that have ledges. There was a time when it was commanded by authority to ufe nothing but dolphin and feal-blubber for fmearing them; but by that the yufts are harfher, and have not that yuft fmell, which foreigners prize fo much, unlefs the birch-tar, deggot, prepared in Ruffia, at leaft be mixed with it. At prefent this birch-tar alone is ufed for fmearing. This done, the fkins are cleanfed from any impurities that may remain, and are fent to the dreffing-houfe, where fkilful workmen fcrape them firft with fcraping-irons, having two handles, with the edge crofs-wife on a ftretching-bench, that a foft thin leather remains with a clear gloffy furface, free from all impurities. Other workmen then take the clean-fcraped yufts on large clean tables, fprinkle them on the flefh fide with a gentle fhower of frefh water from their mouths, and lay them flightly rolled up to moiften. This done, the fkins are taken feparately one after another, folded together, and worked and calendered in all directions, to make them foft and pliant. They are then curried with a kind of wooden curry-comb, with fharp irons fixed in leathers, like a card for carding wool, the fkin being folded with the hair fide outwards, by which the whole furface of the yufts acquire the crofs-ftrokes or trellis-like marks they are always feen to have. Some work the fkins with the hands firft dry, not fprinkling them till they are mangled with the card. Laftly, thofe fkins which are too harfh and ftiff to the feeling, are more or lefs fprinkled with linfeed-oil, and thus are ready for the merchant.

In this connection we fhall introduce from the fame author an account of the Ruffian method of preparing and dyeing their faffian, maroquin, or Morocco leather, which are dyed at Aftrachan of three colours, red, yellow, and black. The treatment of the red faffians, which are the moft famous, is ufually as follows:—The raw hides are firft laid in large vats, and have river water poured upon them, in which they are left to foak for three or four times twenty-four hours. They are then taken out, the water is drained and fqueezed from each fkin, and are fcraped one by one on the ftretching-bank with fcraping-irons, uraki, quite gently on the flefh fide, in order to take away the groffer impurities, but principally for opening the fkin, and to qualify it for the enfuing operation.

They now proceed to make the hair fall clean off, chiefly by the application of lime. To a hundred hides is ftirred in about half a bufhel of unflaked lime in vats with river water, and the hides are laid in fo as that the lime may as much as poffible be equally diftributed over all of them. The Aftrachan Tartars let the hides lie in this lime-pit frequently three weeks; but it is well known, that their faffians are fo harfh and liable to crack, and even fcorched by it, that they are fit for nothing, and can only impofe upon an inexperienced purchafer. They then take out fkins, wafh them, and carefully fcrape off the hair, now become loofe, with wooden fcrapers. It often happens, that the hair is not perfectly loofened by the firft lime-ley, but that many tender ftubbles and fmall hairs are left remaining. In this cafe, the hides muft be put into frefh lime-ley, and be left perhaps two weeks in it; the hair then comes off, and the hair fide of the fkin gets a green and very white appearance, but the fubftance is then alfo very foft, and the faffians, by this corrofion of the lime, are very little durable in comparifon of other kinds of leather.

The method now for taking the lime again out of the hides, is the fecond treatment with dog-excrement, or white gentian, which is carefully collected for this purpofe. This excrement, which is indifpenfably neceffary, is pounded, put into a narrow not very large vat, warm water poured upon it, the mafs thoroughly ftirred, and the cleanfed hides are put with it into another vat, fo as that the diffolved album grecum is fpread and infinuated over and between every fkin. In thefe ingredients, the fkins muft lie only twenty-four hours, or if the quantity of album grecum prove not rich, fomewhat longer. The proportion here to be obferved cannot be accurately afcertained; for the faffian-makers are guided generally by eye-meafure, and obferve only that the water be very thick and turbid, and confequently acrid enough. The hides come out of this corrofive much fofter and thinner than they were, and are now freed from the force of the lime; but no time muft be loft in endeavouring to extract the corrofive likewife, that the hide may not be even more ruined by it than by the lime. They are generally very careful that the hides lie not too long in this corrofive, which they judge of by their eye from the pliancy and fupplenefs of them. As foon as the fkins are lifted out, the unclean moifture is carefully and forcibly preffed out, and they are laid without lofs of time in a vat, wherein wheat-bran is ftirred to a tolerably thick gruel with warm water; in this they lie again about thrice twenty-four hours, whereby all the former defects are completely remedied, and the fubftance of the

fkin

ſkin is ſofter and mellow. All theſe particulars are in ſome meaſure of no other ſervice than to bring off the hair thoroughly clean from the ſkin.

Now follows the proper preparation of the ſkins taken out of the wheat-bran. This is done chiefly by honey. To eighty hides they take about twenty-five pounds of raw honey, boil it in a kettle, pour as much water to it as is neceſſary for giving it a due conſiſtence, and ſtir it for a pretty long time boiling on the fire. They then let the kettle cool, till they can but juſt bear the hand in it, and then pour the ſtill hot honey-water on the hides lying ſingly in little trays, by ladle-fulls, till they have thoroughly imbibed the honey-water. When all the ſkins are duly drenched, they are thrown into a dry vat all together, laying at top a board with weights upon it, and covering the whole vat with felt, carpets, or furs, that the vapour during the fermentation may not eſcape; and in this manner, the ſkins muſt ferment once more thrice twenty-four hours. By this means they acquire the grain. From the honey-vat they are rinſed clean in luke-warm water, wrung as dry as poſſible, and ſteeped immediately in a moderately ſtrong pickle or brine made of common ſalt, in which they muſt be left five or ſix days. This time being elapſed, the ſkins are taken out of the pickle, and hung upon clean poles, that the brine may drain out, as it would be thought injurious to ſqueeze it out with the hands. This done, the ſkins have received their whole preparation, and may now be dyed red, but not yellow; becauſe for the yellow ſaffians, as was ſaid before, the preparation is of another kind.

For giving the red ſaffians the colour, nothing is uſed but cochineal, or, as the Tartars call it, kirmifs, and that in the following method: Firſt, they boil a quantity of the herb ſalſola ericoides, by the Tartars called tſchagan, plentifully growing on the arid Aſtrachan ſalt-ſteppes. To about four Ruſſian vedros of water is put of this dried herb ſomewhat leſs than a pound, and it is ſet to boil for a whole hour, whereby the water acquires a dark greeniſh colour, but betrays no acrimony to the taſte. The ſaffian-maker only takes care that the water be not too deeply tinctured, and that when dropped on the thumb-nail ſhews only a ſcarce perceptible green; and in caſe it have adopted too many particles of the colour, it is drawn off, and freſh water put, in which the herb muſt boil again, till the decoction has received the due degree of ſaturation. The herb is then with a ſcoop taken clean out of the kettle, and then the previouſly nicely powdered cochineal thrown into a kettle of four Ruſſian vedros to about half a pound, well ſtirred, and freſh fire added, in which great attention muſt be paid, that the red ſcum, which ariſes from boiling, does not boil over, therefore conſtantly ſome is taken and again poured in, in order by this refrigeration to prevent the over-boiling, and to allay the foam. After boiling for about an hour and a half, the water has obtained a ſtrong tincture; but as much of it is boiled away, the kettle is filled up again with the remaining decoction of the herb tſchagan, and the thus attenuated colour boiled afreſh, till it is ſeen that the cochineal is perfectly diſſolved, and the colour become thoroughly bright. Upon this, to the whole kettle is put about two lote of pounded and burnt alum into the dye, with which it is to boil about a quarter of an hour, and then the fire is taken from under the kettle, leaving only ſome hot embers, that the dye may retain as much heat as the hand can but juſt bear. This done, the ſkins prepared for dyeing are taken in hand, the dye poured by ladles into trays, one ſkin folded together after another, with the hair ſide outwards, and then are worked in their portion of dye ſo long, till they have uniformly abſorbed all the dyeing particles, and only ſomewhat of a pale moiſture remains. The leathers being thus for the firſt time ſtained are quickly ſqueezed out, hung up ſingly acroſs poles, and when they are all done, they are directly taken for the ſecond time, and imbued in the ſame manner with dye, and this treatment is repeated for the third and the fourth time; ſo that each ſkin gets four ladles of the dye. From the fourth dye the ſkins are no more preſſed out, but hung up entirely wet, to be ventilated, upon poles.

After the dye, the ſkins are once more curried with the leaves of the tan-tree, which the Armenians call belgè. The cruſhed or pounded dry leaves, which the Aſtrachan ſaffian-makers get from the Terek, are ſtirred in broad troughs to a thick gruel with river water, and the coloured ſkins laid in it, between each of them, leaving a ſufficiency of the leaf-ooze; the tanner then goes barefoot into the troughs upon the ſkins lying on one another. In this tan, or quas, as the workmen call it, the ſaffians lie eight days and nights, adding freſh tan every other day; ſo that four tans are neceſſary.

Here it muſt be obſerved, that ſome Armenians who prepare ſaffians, for enhancing the quality of the red colour of their ſaffians, to half a pound of cochineal add two lote, or rather more of ſorrel, (or lutor, or loter, as they call it,) in the dye-kettle, but it is uſually omitted in Aſtrachan, on account of its high price; for which reaſon the Aſtrachan ſaffians are excelled by the Turkiſh in beauty of colour. Secondly, it is to be known, that inſtead of the leaves of the tan-tree, bruiſed nut-galls are held to be ſtill more ſerviceable for giving the ſaffians the tan. By this means, the colour is ſo durable as never to paſs away but with the leather; whereas the ſaffians prepared with the tan-tree begin ſoon to be diſcoloured. But the nut-galls are likewiſe too dear in Aſtrachan to be cuſtomarily uſed by the ſaffian-makers. The Kazan Tartars colour their ſaffians with red wood, and tan them with the ſhrub uva urſi, but it makes the worſt ſaffians of all, as they preſently fade.

When the ſaffians are lifted out of the tan, ſtill the laſt work remains. They are firſt left ſome time in the air to dry, they are afterwards ſcraped on the ſtretch-bank with ſharp ſcrapers on the fleſh ſide, quite ſmooth and clean, then waſhed in running water, each ſkin duly ſtretched with pegs all round the edges, and thus left till they are dry.

The ſkins muſt now be ſmoothed on the hair ſide with a wooden inſtrument for that purpoſe; and laſtly, they are laid on a thick felt, where, with an iron heckle that has blunt points, thoſe little pittings, which the ſaffians are generally ſeen to have, are impreſſed on the ſame ſide. And thus they are ready for ſale, without being ſmeared with linſeed-oil, as is mentioned in Gmelin's travels, which would infallibly ſpoil them.

The yellow ſaffians are little made in Aſtrachan, as the demand for them is much leſs, and there are but few ſaffian-makers who know much of the matter. The dye which they make uſe of for this purpoſe is of the berries of a ſort of rhamnus (perhaps lycioides), which are brought from Perſia under the name of uloſcharr, and uſually bought for ſix to nine rubles the pood. The Kazan Tartars colour their ordinary yellow ſaffians with the flowers of the yellow camomile, which they gather under the name ſare tſchetſchiak, *i. e.* yellow-flower.

In preparing the yellow ſaffians, they obſerve in Aſtrachan the following difference of treatment: 1. They make no uſe whatever of honey in the preparation. 2. They never

never at all put the hides into the falt brine. 3. Inftead of the honey-preparation and the pickling, they lay the hides before the dyeing, in the foregoing manner, in the tan of the leaves of the kitzliar tan-tree, leaving them in it eight days. 4. For preparing the dye, they have no need of the herb tfchagan, but the berries alone are boiled in clear water, of which to four Ruffian vedros of water about ten pounds are requifite, and heighten the colour afterwards with three lotes of alum to every pound of berries. The dyeing is performed in the fame manner as has been related with the red, and after the dyeing there is no need to lay the faffians in the tan, as having before received it. Nothing more is neceffary than to fcrape them clean, to work them thoroughly, to polifh and to ornament them. The yellow faffians ufually are fold at one ruble twenty kopeeks; but the red at fomewhat more, on account of the dearnefs of the dye, generally one ruble eighty kopeeks.

YUG, or Yog, the more correct mode of writing the word *jogue*, by which the Hindoos diftinguifh the poetical or mythological ages of the world. We have noticed thefe wild fpeculations under the more popular word *jogues;* to which, to Gentoos, Kalki, Kalpa, and Yogeswara, we refer thofe defirous of farther information hereon.

YUGASIRI, in *Hindoo Mythology*, is the name of the wife of *Vairava*, an incarnation of *Siva*. See thofe articles.

YUHAGHIRS, in *Geography*, a Ruffian tribe, which occupies the northernmoft parts of the territory of the Yakutes, bordering on the Frozen ocean, from the Yama to the Kolyma. They were known to the Ruffian conquerors as early as the Yakutes; but on account of their wild and impaffable deferts, could not be brought into entire fubjection until the year 1639. They had never feen a horfe, though that fpecies of animals was found among the Yakutes; and therefore they appear to have been for a long time confined to their cold, fenny, and mountainous diftricts. The whole people, at the revifion before the laft, fays Mr. Tooke, paid taxes only for about 1000 heads; but it was fo eafy for them in their deferts to evade the payment, that their entire population may be computed at a much higher number. See Yakutsk.

YVIAS, a town of France, in the department of the North coafts; 4 miles E.N.E. of Pontrieu.

YVICA. See Ivica.

YUKANLOOT, a town of Candahar; 10 miles E.N.E. of Suffa.

YULDUZ. See Yolotou.

YUMA, or Yumba, or *Long Ifland*, one of the Bahama iflands: about 50 miles in length, of very unequal breadth. N. lat. 23° 20′. W. long. 74° 50′.

Yuma, in *Mythology*. See Tscheremisses.

YUMAR, the name of the object of worfhip among the Votiaks; fimilar probably to Yuma, Yummel, and Yummala, among other tribes of the ancient Finns.

YUMBA Bay, in *Geography*, a bay on the E. coaft of the ifland of Hifpaniola, S. of Cape Spada.

YUMETOS, a clufter of fmall iflands, among the Bahama iflands, about 20 miles S.W. from Yuma.

YUMFONG, a fmall ifland, near the coaft of China, about three miles from the ifland of Tfeng-ming. N. lat. 31° 42′. E. long. 121° 17′.

YUMMALA, in *Mythology*, an idol deity of the Finns, who had a rich temple in Permia, or Biermia, fuppofed to have extended from the White fea to the mountains of Ural. This temple was decorated with a profufion of gold and jewels. See Permians.

YUMMEL, an appellation by which the Lieflanders and Efthonians worfhipped the true God; in fubordination to whom they only admitted inferior deities as beneficent and malicious fpirits.

YUN, in *Geography*, a city of China, of the fecond rank, in Yun-nan; 1262 miles S.W. of Peking. N. lat. 24° 32′. E. long. 99° 35′.

Yun, or *Tong-pe*, a city of China, of the firft rank, in Yun-nan; 1135 miles S.W. of Peking. N. lat. 26° 44′. E. long. 100° 34′.

YUNA, a river of Hifpaniola, which runs into the Somana bay.

YUNCHA, a town of South America, in the province of Tucuman; 60 miles S. of St. Jago del Eftero.

YUNG-KANG, a city of China, of the fecond rank, in Quang-fi; 1140 miles S.S.W. of Peking. N. lat. 22° 56′. E. long. 107° 26′.

YUNG-NGAN-POU, a fortrefs of China, in Chen-fi, on the borders of Tartary; 110 miles N. of Ling-tao.

YUNG-NING, a city of China, of the fecond rank, in Chan-fi; 300 miles S.W. of Peking. N. lat. 37° 35′. E. long. 110° 39′.

YUNGUS, or Vungus Vicus, in *Ancient Geography*, a place of Gaul, on the route from Reims to Treves. Anton. Itin.

YUN-HING, in *Geography*, a city of China, of the firft rank, in Ho-nan. The country within its diftrict is very large, and is partly flat, and partly mountainous, efpecially to the north and fouth; it is watered by feveral rivers, which render the foil very fruitful. There are two towns of the fecond rank, and twelve of the third under its jurifdiction; 430 miles S. of Peking. N. lat. 33°. E. long. 113° 52′.

YUN-LEAN-HO, a canal of China, formed of the river Pay-ho, or rather the river itfelf made navigable from Hiam-ho to Tien-tfin, in the province of Pe-tche-li, for the purpofe of conveying corn towards Tong-tcheou and Peking. The name in the Chinefe language is faid to mean corn bearing.

YUN-NAN, a province of China, bounded on the N. by Se-tchuen and Thibet, on the E. by Quang-fi and Koeitcheou, on the S. by Laos, and on the W. by Ava and Pegu; about 300 miles in length, and 250 in breadth. This province is reckoned one of the moft fertile and opulent in China. Its inhabitants are brave, robuft, affable, and fond of the fciences, which they cultivate with fuccefs: its rivers, gold, copper, and tin-mines; its amber, rubies, fapphires, agates, pearls, precious ftones, marble, mufk, filk, elephants, horfes, gums, medicinal plants, and linen, have procured it a reputation which renders it refpectable to the Chinefe. Its commerce is immenfe, as well as its riches, which are faid to be inexhauftible. This province contains 21 cities of the firft clafs, and 55 of the fecond and third. Sir George Staunton eftimates the population at eight millions.

Yun-nan, a city of China, of the firft rank, and capital of Yun-nan, fituated at the north extremity of a lake. It was formerly celebrated for its extent, and the beauty of its public edifices. Here were feen magnificent buildings, vaft gardens, tombs, triumphal arches, and elegant fquares; but the Tartars, in their different invafions, deftroyed all thefe monuments; and the city at prefent contains nothing remarkable: it is, however, the refidence of the governor of the province. It comprehends in its diftrict four towns of the fecond clafs, and feven of the third; 1152 miles S.S.W. of Peking. N. lat. 25° 6′. E. long. 102° 28′.

YUNTAI, an ifland near the coaft of China, in the

Eastern sea, 30 miles in circumference; about two miles and a half from the continent. N. lat. 34° 35′. E. long. 119° 19′.

YVOY. See CARIGNAN.

YUPURA, a river of Peru, which branches off from the Caqueta, about N. lat. 1°, and after an easterly course of about 500 miles, runs into the river of the Amazons by many mouths, 100 miles W. of Fort Rio Negro. S. lat. 4°.

YURATZKOI, the denomination of the shore that lay between the rivers Yenissey and Oby.

YURCUP. See URCUP.

YURE L'EVEQUE, a town of France, in the department of the Sarte, on the Huise; 3 miles E. of Le Mans.

YURIEF, a name given by the Russians to Dorpat, built by order of Yaroslaf in the year 1030.

YURIMAGUAS, a town of South America, in the audience of Quito, on the Guallaga; 60 miles S. of La Laguna.

YURNA, a small island on the coast of Brasil, at the mouth of the river Amazons, near the equinoctial line. W. long. 50° 40′.

YVRY, a town of France, in the department of the Eure; 11 miles N. of Dreux.

YUSDROME, in *Commerce*, a weight of Turkey, the oke being the 44th part of the cantaro, quintal, or kintal, containing four yusdromes, or chequees, or 400 druns; the chequee of cotton yarn being = 11½ ounces avoirdupois; the chequee of goat's wool = 5 lbs. 10 oz. avoirdupois; and the chequee of opium = 27 oz. 10 dr. avoirdupois.

YUTHIA, in *Geography*, the capital city of Siam, situated on an island formed by the river Meinam. See SIAM.

YUTI, a town of Paraguay, on a river of the same name, which runs into the Paraguay, 115 miles S.E. of Assumption.

YU-YANG, a town of Corea; 15 miles S. of Kang.

YXIR, a word used by some of the old chemists to express any thing good in medicine.

YZQUAUHTLI, in *Ornithology*, the Indian name for a bird described by Nieremberg, and called the crested eagle.

YZQUIEPATL, in *Zoology*, the name of an American animal of the weasel kind, with a short slender nose; short ears and legs; black body, full of hair; long tail, of a black and white colour; its length from nose to tail is about eighteen inches. It inhabits Mexico, and perhaps other parts of America. It lives in the caves and in the hollows of rocks, where it breeds, and brings up its offspring. It feeds on worms, beetles, and other insects, and small animals: when pursued, it breaks wind backward with an insupportable stench. See CONEPATL.

Professor Kalm was one night in danger of being suffocated by one that was pursued into a house where he slept; and it affected the cattle so that they bellowed through pain.

Another, which was killed by a maid-servant in a cellar, so affected her with its stench, that she lay ill for several days; and all the provisions in the place were tainted to such a degree, that the owner was obliged to throw them away.

Nevertheless, the flesh is reckoned good meat, and not unlike that of a pig; but it must be skinned as soon as killed, and the bladder taken carefully out. Pennant.

Z.

Z, The last letter in the alphabet, and one of the double consonants, both among the Latins and Greeks.

Its pronunciation is much more soft and obtuse than that of the *x*; which makes Quintilian call it *jucundissima*, and *dulcissima*. Nevertheless, the sound was not always the same as it is now; which is but, as it were, half that of an *s*: or, that, expressed by its name *izzard* or *s hard*, of an *s* uttered with closer compression of the palate by the tongue, as *freeze*, *froze*.

It had something originally in it of the *d*; but only what sounded very smoothly: thus, *Mezentius* was pronounced as if it had been *Medsentius*, &c.

The Z had also an affinity with the *g*: thus Capella, "z à Græcis venit, licet etiam ipsi primo *g* Græca utebantur."

Z begins no word originally English; although it is found in the Saxon alphabets, set down by grammarians, it is read in no word originally Teutonic. Johnson.

Z was also a numeral letter, signifying two thousand; according to the verse:

"Ultima Z tenens, finem bis mille tenebit."

When a dash was added at the top, $\bar{Z}$, it signified two thousand times a thousand.

This letter formerly stood as a mark for several sorts of weights. Sometimes it signified an ounce and a half, and very frequently it stood for half an ounce: sometimes for the

the eighth part of an ounce, that is, a drachm Troy-weight; and it has in earlier times been used to express the third part of an ounce, or eight scruples.

On French coins, Z denotes those struck at Grenoble.

ZZ, these letters were used by some of the ancient physicians to express myrrh. At present they are often used to signify *zinziber*, or *ginger*.

ZAAB, or Zeb, in *Geography*, a district of Africa, in the country of Sahara, belonging to the Algerines. It was anciently a part of the Mauritania Sitifensis, and is a narrow tract of land lying immediately under the Atlas. N. lat. between 34° 30′ and 35°.

ZAARA. See Sahara.

Zaara, a word used by the *Arabian physicians*, to express the *vigilia morbosa*, or continual watchings of persons in many illnesses.

ZAARAM, in *Ancient Geography*, a town of Arabia Felix, which, according to Ptolemy, was the residence of the king of the Cinædocolpites.

ZAARON, in *Geography*, a mountain of Africa, on the western side of the plain of Fez, in sight of Mequinez, on which is a village consecrated to Mahometan devotion. It contains the sanctuary of Sidi Edris, who came from Medina at the end of the 8th century, introduced Mahometanism, and was the first sovereign of his race in this part of Africa. This sanctuary is an asylum for malefactors, and never violated by the emperor of Morocco.

ZAB, a town of the Arabian Irak, on the Euphrates; 65 miles W.S.W. of Bagdad.

Zab, *Great*, the Zabatus of Xenophon, and Lycus of Ptolemy, a river of the Lower Kurdistan, in the pachalic of Bagdad, which rises in the same range of hills, and contiguous to those of the Diala, mentioned in history by the names of Delos and Arba; this latter river, increased by several streams, continues its course to the south, and enters the Tigris, about 5 miles above Tauke Kesra. During the summer it is fordable at Bakooba, 9 leagues from Bagdad, on the road to Kermanshaw, and is near 150 yards wide, at the place where a bridge of boats is thrown across it, for the convenience of travellers, just before it approaches the Tigris. The Great Zab at first pursues a northerly course, when meeting with a small stream, which comes from the district of Alhak, it proceeds to the westward, unites with the Hakiar, or river of Julamerick, and then flowing in a S.W. direction, forms a junction with the Hazir su (anciently Bumadus), and disembogues into the Tigris at Toprukala, 14 fursungs (or about 42 miles) below Mosul. Between Mosul and Erbille, this river can only be forded in the summer, and when low, it is so deep and so rapid that it is difficult of passage. The 10,000 Greeks commenced their retreat by crossing this river in the face of the Persian army. Xenophon reckons it 400 feet wide; but when the Greeks passed it, it must have been fordable.

Zab, *Little*, the *Zabus Minor* and *Caprus* of the Macedonians, a river of Kurdistan, formed by the junction of a great number of little brooks, which originate in the hilly country to the E. of Khoi Sindjack. At Altun Kupri, 68 fursungs from Bagdad, on the route to Mosul, it joins the Altun su, or golden water, and terminates in the Tigris, opposite to the large and rich city of Cœne, or the present village of Senn, 30 miles below Haditha. This river is narrow, winds very deep, and very rapid. That part of the Lower Kurdistan that lies N. of the Little Zab, has in every age been a rich and productive province; and still continues to supply Bagdad, Mosul, and the other cities, with corn, cattle, cheese, butter, dried fruits, and almost every other kind of provision. Another river, the Odorneh, supposed by some authors to be the *Phuskus* of Xenophon, is also formed by the junction of many streams, which arise in the hills between Kerkuk, the largest town in the Lower Kurdistan, (N. lat. 35° 29′,) and *Solymania* (which see). *Kerkook* or *Kerkuk*, (which see,) entitled *Demetrius* by Strabo, and *Corcura* by Ptolemy, lies in the direct road from Bagdad to Mosul, 59 fursungs from the former, and 41 from the latter, on a commanding eminence, but with narrow and filthy streets and mean houses. The population is estimated at 18,000 souls, Turks, Armenians, Nestorians, and Kurds; but this estimate is supposed to exceed the truth by 5000. It is defended by a mud wall, has 2 gates, 7 mosques, 14 coffee-houses, one hummum, one caravansera, one Armenian church, and 12 pieces of useless artillery. The suburbs contain 5 mosques, 9 small caravanseras, 13 coffee-houses, 3 convents, and 3 catholic churches. Around the town the country is hilly, and on the N. side a low range of barren and rocky mountains separates the district of Kerkook from the fine plain of Altun Kupri. At a small distance there is a number of naphtha pits, which supply the neighbouring country with the naphtha, which in a liquid state is raised in leathern buckets, and deposited in earthen jars. The river Odornah, after pursuing a S.W. course, falls into the Tigris, 20 fursungs above Bagdad. Its bed is about 60 yards broad, and its springs contain a large body of water. Kinneir's Persia.

ZABA, or Sabana *Emporium*, (*Batu-Saber*,) in *Ancient Geography*, a considerable place, and one of the principal trading towns of India, in the peninsula beyond the Ganges; marked in the map of D'Anville, a little W. of the S.E. point of this peninsula.

ZABACHA, in *Geography*. See Azof.

ZABADÆANS, in *Ancient Geography*, Arabs who lived to the east of the mountains of Galaad. In the 1st book of the Maccabees we learn that Jonathan marched against them, and defeated them.

ZABATRA, in *Geography*, a town of Asiatic Turkey, in the government of Marasch; 48 miles N.E. of Marasch.

ZABDA, a large and pleasant town of Syria, situated among the mountains, and chiefly, if not solely, inhabited by Christians, which furnishes 700 men fit for war. The town is divided into five districts, each having its separate scheick, who pays tribute to the emir of the Druses: they complain of oppression; and the state of the place and the adjacent country shew that their complaints are not unfounded. The town is sheltered by mountains, but the locusts are very destructive. Tobacco is one of the chief articles of cultivation. A rivulet, rolling from the rocks, turns the mills, and waters the ground. The air is salubrious, unmolested with excessive heat. Near it is a long structure, apparently part of an aqueduct, called "the tomb of Noah." It extends about 60 feet, being the stature of Noah, according to oriental tradition. The pilgrims who formerly came to worship in an adjacent mosque were very numerous; and the religious revenue is said to amount to 300 purses annually. Browne's Travels.

ZABDICENA, in *Ancient Geography*, a country of Asia, and one of those called by Ammianus Marcellinus Transtigritanes, because they lay beyond the Tigris, with respect to Persia. It was extended along the Tigris.

ZABECES, a people of Africa, in Libya, neighbours of the Marges and Zygantes, according to Herodotus.

ZABELTITZ, in *Geography*, a town of Saxony, in the margravate of Meissen; 4 miles N. of Grossen Hayn.

ZABER, a river of Wurtemberg, which runs into the Neckar, near Lauffen.

ZABERN, Conrard de, in *Biography*, born in Germany about 1450, was a very learned man, and much respected for his morals. He wrote two treatises on music; the first of which is entitled "De Monochordo," and the second "De Modo bene Cantandi." He was much beloved by the emperor Frederic III.

Zebern, in *Geography*. See Bergzabern.

ZABI, or Zaba, in *Ancient Geography*, a place of Africa, in Mauritania Sitifensis, on the route from Carthage to Cæsarea, between Aræ and Macri. Anton. Itin.

ZABII, or Zabians. See Sabæans and Sabaism.

ZABIN, in *Geography*, a town of Lithuania; 30 miles N.E. of Minsk.

ZABIRNA, in *Ancient Geography*, a river of Asia, in Mesopotamia, which discharges itself into the Tigris.

ZABLOTOW, in *Geography*. See Sablotow.

ZABLOWICZE, a town of Lithuania; 86 miles E.S.E. of Pinsk.

ZABOLA, a town of Transylvania; 10 miles N. of Cronstadt.

ZABORE, a town of Russia, in the government of Irkutsk; 36 miles S.S.W. of Kirensk.

ZABRZEH. See Hohenstadt.

ZABULISTAN. See Sablestan.

ZABULON. See Zebulun.

Zabulon, *Tribe of*, in *Ancient Geography*, was bounded on the N. by the tribes of Asher and Naphtali, on the S. by the torrent of Kishon, on the E. by the sea of Galilee, and on the W. by the ocean. Almost all the towns of this tribe were on the plain of Galilee.

Zabulon, a town of Judea, situated on the plain of Galilee, in the tribe of the same name, according to Joshua and the book of Judges. Josephus says, that Cestius, though he admired its beauty, took, pillaged, and burnt it. It was situated S.E. of Ptolemais.

ZABUR, a country of Asia, in Babylonia, in which was the town of Seleucia.

ZABUS, Zabatus, or *Zerbis*, (*Great Zab* or *Zarb*,) a river, which is the same with the Lycus, flowed from a source towards the 36th degree of latitude, and directed its course first to the N.W., then to the W., afterwards to the S.W., and finally to the S., discharging itself into the Tigris, about lat. 35° 45′. Xenophon says, that this river, at its entrance into the Tigris, appeared to the Greeks comparable to the Tigris itself. See Zab.

Zabus *Minor*, or *Caprus*, (*Lesser Zab*, or *Altun-Sou*,) a river of Asia, which had its source E. of Arbelles, and ran towards the S.W., discharging itself into the Tigris, over against Cœne, below or S.S.E. of the greater Zabus. See Zab.

ZACA, in *Geography*, a town of Egypt; 17 miles N.E. of El Arish.

ZACANTHA, in *Ancient Geography*, a town of Hispania, in Iberia, said by Steph. Byz. to have been taken by Hannibal, and to have been called Zacynthus or Saguntum.

ZACAPA, in *Geography*, a town of Mexico, in the province of Vera Paz; 42 miles S. of Vera Paz.

ZACAPULA, a town of Mexico, in the province of Chiapa; 130 miles S.E. of Chiapa dos Espagnols.

ZACATECAS, a province of Mexico, bounded on the north by New Biscay, on the east by Guasteca, on the south by the provinces of Mechoacan, Guadalajara, and Chiametlan, and on the west by Chiametlan and Culiacan. It is well inhabited, and abounds with large villages. Part of it lies in the temperate and part in the torrid zone: it is about 100 leagues in length, and 45 in breadth. The western part of it is an arid tract, and would not be inhabited were it not for the mines, which were formerly reckoned the richest in America; but the eastern part abounds with corn, and fruits of various kinds, and its forests are full of deer.

Zacatecas, the capital of the fore-mentioned district, the importance of which has declined with the mines. It formerly contained about 12,000 families of Spaniards and mixed breeds, though consisting chiefly of one street, in a deep passage between high rocks, crowned with cottages. Luis de Potosi on the S.E. is said by Alcedo to contain only 1600 families of Spaniards, Mulattoes, and Indians, though it has six magnificient churches. The ridge of St. Peter, five leagues from the city, contained rich mines of gold and silver; but they are now in part exhausted, and the fuel has become scarce. The opulence of this city has in course declined, and the chief trade is in goat-skins and tanned leather.

Zacatecas. See St. Louis *de Zacatecas*.

ZACATLAN, a town of Mexico, in the province of Tlascala; 30 miles N. of Puebla de los Angelos.

ZACATULA, or Sacatula, a town of Mexico, in the province of Mechoacan, on a river of the same names, near the Pacific ocean; 95 miles S. of Mechoacan. N. lat. 18° 35′. W. long. 103°.

Zacatula, a small but fertile province in the dominion of Mexico.—Also, a river of Mexico, which runs into the Pacific ocean, near the town of Zacatula.

ZACCARIA. See Tevo.

ZACCHIA, Paolo, in *Biography*, an eminent physician, was born at Rome in 1585, and in the progress of life was distinguished by his learning, and by his skill in music, painting, poetry, and eloquence, as well as in the more appropriate sciences relating to his own profession. He was physician to pope Innocent X., and celebrated among his contemporaries by various publications; of which the principal is intitled "Questiones Medico-legales, in quibus omnes materiæ medicæ quæ ad legales facultates videntur pertinere, proponuntur, pertractantur, resolvuntur;" a work which has been often reprinted. He was also the author, in Italian, of two esteemed works, "Del Vitto Quadragesimale," 1637, the subject of which is the regimen of diet in Lent; and "De' Mali Ipocondriachi," 1639, a diffuse treatise on hypochondriacal affections. He died in 1659, aged 75. Haller. Eloy. Gen. Biog.

ZACCONI, P. Lodovico, of Pesaro, author of an ample treatise of music, entitled "Prattica di Musica," the first part of which was printed at Venice, 1592, and the second in 1596; a publication in which the author not only proposes to give instructions for the regular composition, but the accurate performance of every species of music. The idea is splendid; but the world has been so frequently deceived by the titles of books, that authors are obliged to abate in their promises, in proportion as the expectations of the public are diminished. If arts and sciences could be acquired by the dead letter of silent instruction, every one who could read, in Italy, might, during the times under consideration, have been a musician. But though no ingenious occupation was perhaps ever yet completely taught by books, without a master, or by a master, without books, yet they are excellent helps to each other. It is hardly possible for a didactic work to satisfy all the doubts that arise in an inquiring mind during solitary meditation; particularly in the first stages of a student's journey through the rugged roads of science. But when he has made some progress, if he should be separated from his guide, the way becomes daily so much more straight and smooth, that by the

the help of these kinds of charts, he will be enabled to advance with tolerable speed and facility by himself.

Zacconi's work, though sometimes dry and tedious, contains much useful and practical knowledge. And as he is almost the only Italian writer on the subject of music who has not bewildered himself in inquiries concerning the systems of the ancient Greeks, or the philosophy of sound, he has had the more leisure for analysing the art, and facilitating the student's progress. This author regarded Okenheim, Josquin, Isaac, Brumel, Mouton, and Senfelio, as ancients compared with Willaert, Morales, Cipriano, Zarlino, and Palestrina; and these last, ancient with respect to himself and cotemporaries; and says (lib. i. cap. x.), that as the ancient Greeks and Romans produced their musical effects by mere melody, united with poetry, and Josquin and other early contrapuntists, by notes of different lengths, harmonized and worked into perpetual fugue; so the more modern, though the rules of harmony are the same, by a different disposition of concords, inversions, and other contrivances, produce a greater variety of effects.

He likewise observes (cap. xxiii.), that "every age has vainly thought its music brought to as great a degree of perfection as was possible; but it was always found that the next age continues to change, and still to think the same. Okenheim, the master of Josquin, and even in the days of Josquin, John Mouton, his scholar, had the same ideas of their own improvements; yet, since their time, music has not stood still, but made great advances towards perfection, being more light and pleasing."

The change in musical *modes* has continued to our own time, and will doubtless continue to the end of *all* time; for melody, being a child of fancy and imagination, will submit to no theory or laws of reason and philosophy; and therefore, like love, will always continue in childhood.

Zacconi's chief labour and merit in the third book have been the explanation of the moods, and correction of errors in the notation of old composers, to which his work will serve as a useful collection of errata. In Book I. he dwells much on the superiority of the singing and singers of his own time, over all that preceded them; and has a long chapter upon the manner of gracing and embellishing a melody, where he tells us, "Che stile si tenghi nel far di *gorgia;* dell' uso de i moderni *passagi*, come si *fiorischino* le cantilene;" and speaks of *acconciature*, as the modern Italians do of *rissioramenti*, or graces. The divisions, however, into which he breaks passages, in order to *embellish* them, if adopted by an opera-singer of the present times, would be like a modern fine lady appearing at court in the furbelows and flounces of queen Elizabeth, or a fine gentleman in the peruke of sir Cloudesley Shovel.

ZACHAN, or SOCHAN, in *Geography*, a town of Hinder Pomerania; 14 miles E. of Stargard. N. lat. 52° 13′. E. long. 15° 28′.

ZACHAREVSKAIA, a fort of Russia, in the government of Ekaterinoslav, on the Konskija; 28 miles W. of Mariupol.

ZACHARIÆ, JUSTUS FREDERICK WILLIAM, in *Biography*, was born at Frankenhausen in Thuringia, in 1726; and during the course of his elementary education at his native place, he distinguished himself by various poetical pieces. In 1743 he went to Leipsic to study jurisprudence, but directing his chief attention to the belles lettres, he produced his mock-heroic poem, entitled "Renommisten," which Eichorn, in his History of Literature, says, was the commencement of heroi-comic poetry among the Germans. In the following year, he was admitted as an associate by the young men who contributed to the work published under the title of "Amusements of Reason and Wit." From Leipsic, where he remained about three years, he removed to Gottingen, where, attracting the notice of professor Klaproth, he was recommended by him to be a member of the German society. In 1748 he was appointed tutor at the Caroline college at Brunswick, and in 1761 he became professor of poetry in that institution; to which, in the succeeding year, were annexed the offices of inspector of the typographic and bookselling establishment belonging to the Orphan House, and director of the Brunswick Intelligencer. From 1768 to 1774, he was editor of the New Brunswick Gazette; in 1775 he was appointed to the diaconate of St. Syriac, at Brunswick; and he died in the month of June, 1777, in the 51st year of his age. His biographer states, that "he possessed a very fertile and vivid imagination, with a fine taste, improved by observation and acquaintance with the world. As a poet, he composed with uncommon facility, and tried his talents in almost every species, but was the most successful in the descriptive and heroi-comic. His burlesque poems were distinguished from every thing of the kind that had before appeared in Germany." A collection of Zachariæ's poetical works was published at Brunswick in 1763—1765, 9 vols. 8vo. Gen. Biog.

ZACHARIAH, or ZECHARIAH, one of the minor prophets, who commenced the exercise of his gift in the 8th month of the 2d year of Darius, the son of Hystaspes; and on account of the precision and clearness of his predictions, he has been intitled "the sun among the minor prophets." The most remarkable of his prophecies are those that relate to the advent of the Messiah, and to the destruction of Jerusalem. Dupin.

ZACHARIAS, *Pope*, a native of Greece, succeeded Gregory III. in 741; at a time when the Roman territory was threatened with an invasion by Luitprand, king of the Lombards, and when the sons of Charles Martel were too much engaged by domestic broils to undertake its defence. The pope, therefore, tried how far he might avail himself of the authority of religion in averting the storm; and by a solemn embassy and personal visit, he not only obtained peace, but induced Luitprand to restore to the Roman see four cities which he had taken from it. He also interposed, in 743, with Luitprand on behalf of the exarch of Ravenna, and prevailed with him to desist from an invasion of the exarchate, and to grant peace, as well as to give back the fortress of Cesena to the exarch; and in the same year he held a council at Rome to settle some matters of discipline, particularly such as related to the clergy. During the pontificate of Zacharias in the year 746, Carloman, the eldest son of Charles Martel, who had surrendered his dominions to his brother Pepin, went to Rome, and assumed the monastic habit, with which he was solemnly invested by the pope. Rachis, the successor of Luitprand, who, upon his accession to the throne in 747, was peaceable disposed towards the pope and the Romans, took up arms against them; but his hostile purposes were averted by the remonstrances of Zacharias, and those of some of his principal clergy and nobility, who visited his camp, in order to obtain peace; nor were they successful merely in this object; but the result of their interview was Rachis's resignation of his crown, the assumption of the monastic habit conferred upon him by the pope, and retirement to the monastery of Monte Casino, where Carloman resided. In 752 Pepin applied to the pope for permission to seize the crown of France, and to set aside Childeric III.; the pope consented, and Childeric was provided for in a monastery. Zacharias, having displayed talents in the exercise of his office, which gave

him

him rank among the greateſt of the popes, and having eſtabliſhed an eſtimable character by his liberality to the poor, and by his munificence in public works, died in 752, in the 11th year of his pontificate. Some of his decrees and epiſtles, and alſo his tranſlation of the dialogues of St. Gregory from Latin into Greek, are extant. Bower.

ZACHAROVA, in *Geography*, a fort of Ruſſia, in the government of Irkutſk; 32 miles N.N.E of Kirenſk.

ZACHAU, a town of Brandenburg, in the Middle Mark; 10 miles E. of Brandenburg.

ZACHAW, Frederic Wilhelm, in *Biography*, an able múſician and organiſt at Halle, in Saxony, was born at Leipſic in 1665. He had the honour and good fortune to have Handel for his ſcholar. He is ſtill celebrated by the Germans as a maſter, who had eſtabliſhed an admirable ſchool of muſic at Halle, and as one who was deeply ſkilled in all the arcana of compoſition and performance.

ZACHEO, or Desechio, in *Geography*, a ſmall iſland in the Weſt Indies, between Hiſpaniola and Porto Rico; about 27 miles N.E. of Mona.

ZACHTLEVEN, Cornelius, in *Biography*, was born at Rotterdam in 1606, and became an admirable painter of ſcenes of humour, imitating the ſtyle of Bronwer; but in ſubjects of a more ſober deſcription, which he alſo painted, ſuch as farm-houſes, kitchens, and the recreations of villagers, &c. he choſe the more light and agreeable ſtyle of Teniers for his model; and in that ſtyle attempted to embody the ſame deſcription of perſons and compoſitions. In neither, however, of his imitations did he attain an equal degree of ſpirit or of truth with his prototypes. His works are well compoſed, and the touch with which they are executed is bold and free; they are not often met with, but are thought deſerving of a place in the beſt collections.

Zachtleven, Herman, was the younger brother of Cornelius, and was born at Rotterdam in 1609. He is ſaid to have been the pupil of Van Goyen, but did not follow the ſtyle of that maſter. His principal occupation appears to have been in painting views of the banks of the Rhine and the Meuſe. Theſe he executed in a very neat manner, but with a mean and common-place ſtyle of ſelection and imitation. The tones and hues of his pictures are generally cold, but freſh; and as he appears to have had great knowledge of aërial perſpective, his diſtances are well preſerved; and the forms drawn with great care and minuteneſs. He never left Flanders, though it has been aſſerted that he went to Italy. His drawings are numerous, and are carefully preſerved in the beſt collections. He died in 1685, aged 76. Both he and his brother Cornelius employed the etching-needle, and left ſeveral neatly executed plates, from deſigns of their own.

ZACINTHA, in *Botany*, whether ſo called by Matthiolus, the author of the name, becauſe this plant was originally found in the iſle of Zante, or for what other reaſon, does not appear.—Matth. Valgr. v. 1. 457. t. 460. Schreb. Gen. 534. Willd. Sp. Pl. v. 3. 1624. Ait. Hort. Kew. v. 4. 468. Sm. Prodr. Fl. Græc. Sibth. v. 2. 145. Tourn. t. 269. Poiret in Lamarck v. 8. 831. Gærtn. t. 157.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ-ſemifloſculoſæ*, Linn. *Cichoraceæ*, Juſſ.

Gen. Ch. *Common Calyx* double: the *outermoſt* ſhort, erect, of ſeveral lanceolate leaves, membranous at the edges; *innermoſt* larger, ſimple, furrowed, of eight permanent, linear, acute, converging leaves; at length ſwelling and very prominent at the baſe. *Cor.* compound, imbricated, uniform: florets equal, perfect, of one petal, ligulate, linear, abrupt, with five teeth. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen ovate-oblong; ſtyle thread-ſhaped, the length of the ſtamens; ſtigmas two, reflexed. *Peric.* none, except the interior calyx, which becomes woody, cloſed, depreſſed, with a point, having eight rounded protuberant angles, each ſcale enfolding one of the marginal ſeeds. *Seeds* ſolitary to each floret; the *marginal* ones ovate-oblong, incurved, compreſſed at the ſides, gibbous at the back, tapering below, ſtriated; longitudinally channelled, and villous, in front; *central* ones oblong, ſlightly incurved, quadrangular, compreſſed at the back, ſtriated, ſmooth. Down ſeſſile, ſomewhat feathery. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Seeds of the circumference incurved; of the centre ſtraight. Down very ſhort, finely feathery. Outer calyx membranous; inner with eight protuberances.

1. Z. *verrucoſa*. Warty Zacintha. Gærtn. v. 2. 358. Willd. n. 1. Ait. n. 1. Sm. Fl. Græc. Sibth. t. 820, unpubliſhed. (Lapſana Zacintha; Linn. Sp. Pl. 1141. Cichorium verrucatum, Zacintha; Cluſ. Hiſt. v. 2. 144. C. verrucarium; Ger. Em. 289.)—Native of Italy, Crete, Lemnos, and Zante, as well as of mount Athos. *Sibthorp.* The *root* of this, the only known ſpecies, is annual. *Stems* ſomewhat leafy, round, ſmooth, branched and forked, ſpreading, from a ſpan to eighteen inches high. *Leaves* runcinate, ſmooth; the radical ones largeſt and moſt numerous. *Flowers* yellow, ſmall. The ſwelling part of the *calyx*, after flowering, aſſumes a purple colour. See Lapsana and Rhagadiolus.

ZACO, in *Geography*, a territory which probably belonged to the province of Adiabene, and was generally comprehended between the Tigris and the Caprus, or Little Zab. The ridges or mountains of Zaco are a part of the Kurdiſtan region, on which was the road along the Tigris, between Moſul and Jezirah. Theſe ridges were lofty, ſteep, and rocky, and the path rugged and difficult of aſcent. It was part of the road of the 10,000 Greeks in their retreat. The preſent town of Zaco ſtands near the northern part of the ridge, denominated from it; and it is the moſt conſiderable place that occurs between Moſul and Jezirah; and is ſurrounded by a fertile diſtrict, which produces a great variety of excellent fruits. Zaco ſtands in an iſland of the river Kurnib, which deſcends from the Kurdiſtan or Carduchian mountains, and falls into the Tigris, a few miles below the town.

ZACONDA, a town of Africa, in the country of Ante, where the Dutch built a fort. It was a conſiderable town at one time, till in a war between the people of Ante and Adom, it was burnt down by the latter; ſince which it has never been thoroughly repaired.

ZACUTO, or Zacutus Lusitanus, in *Biography*, a phyſician, was born at Liſbon in 1575, and educated at Salamanca and Coimbra. In his 20th year he took the degree of doctor, and ſettling in his native city, practiſed with reputation for thirty years. As he was a deſcendant of Jewiſh parents, his dread of the Inquiſition, after the edict of Philip IV. againſt the Jews was iſſued in 1625, induced him to retire to Holland, where he openly profeſſed the religion of his family, and maintained a character highly reſpectable, both in his profeſſion as a phyſician, and in his moral conduct. He died at Amſterdam in the year 1642; and left behind him a collection of works, amounting to 2 vols. fol. The principal of his works are, "De Medicorum Principum Hiſtoria," lib. vi. in which he approves himſelf a ſtrenuous advocate of Galen and the Greek phyſicians; "Praxis Hiſtoriarum Morborum," lib. v.; and "Praxis Medica admiranda," lib. iii. In all his works he blends acuteneſs of obſervation with a certain degree of

ſuperſtitious

ſuperſtitious credulity; but they are nevertheleſs conſulted and quoted. Haller. Eloy.

ZACYNTHUS, in *Ancient Geography*, an iſland of the Ionian ſea, W. of that part of the Peloponneſus on which is the Sinus Chelonitis. It is now called *Zante*. Strabo makes its compaſs 160 ſtadia. It had many forts, and was very fertile. In this iſle was a town of the ſame name, ſituated in the eaſtern part, with a citadel. According to Dionyſius of Halicarnaſſus, it derived its name from Zacynthus, ſon of Dardanus, who, accompanied by a number of Phrygians, ſettled here. According to Thucydides, the firſt Greeks known in this iſland were Achæans, who came hither from Achaia. It paſſed under the dominion of Philip, king of Macedon, who ſurrendered it to Amynander, king of the Athamanes, who confided the government of it to Philip of Megalopolis, by whom it was transferred to Hierocles of Sicily. After the defeat of Antiochus at Thermopylæ, Hierocles ſold it to the Achæans. Livy ſays, that the town and citadel were aſſaulted and captured by Levinus; and Pauſanias informs us that it was called Pſophis. According to Scylax it had one port; and Pliny ſays that it was very fertile, and that its port was named Hyrie; but P. Mela diſtinguiſhes Hyrie from Zacynthus.

ZACYNTHUS, a town of Africa, in Libya. Steph. Byz.

ZACYNTHUS, an epithet uſed by the ancients to a liquid bitumen, from the iſland Zante.

ZAD, in *Geography*, a name given to the Niger of Africa, in Bornou, which is deſcribed in Horneman's Journal as flowing eaſtwards. Its breadth was given to him for one mile, and he was told that it flowed towards the Egyptian Nile, through the land of the heathens. The courſe here given is directly towards the Congo; and it is ſaid, that Zad is the name of the Congo at its mouth, and it is the name of the Congo for at leaſt 650 miles inland.

ZADADRUS, in *Ancient Geography*, a river of India, on this ſide of the Ganges; which received the waters of the Hypaſis and Adris, according to Ptolemy.

ZADAN, in *Geography*, a town on the weſt coaſt of the iſland of Celebes. S. lat. 2° 55′. E. long. 119° 9′.

ZADAON, a river of Portugal, which runs into the Atlantic, near Setuval.

ZADELSDORF, a town of Saxony, in the circle of Neuſtadt; 3 miles S.S.E. of Auma.

ZADONZK, a town of Ruſſia, in the government of Voronez, on the Don; 92 miles N. of Voronez. N. lat. 53° 4′. E. long. 39° 14′.

ZADRACARTA, in *Ancient Geography*, a very large town of Aſia, the capital of Hyrcania, according to Arrian.

ZADRAMA, a town of Arabia Felix, the capital of the Cinædocolpites. Steph. Byz.

ZADRAN, in *Geography*. See HATVANY.

ZADRIS, in *Ancient Geography*, a town of Aſia, in the interior of the Colchide. Ptol.

ZADURA, in the *Materia Medica* of the ancients, a name given to a foreign root, which was round and ſmooth, and of the colour of ginger.

It was at that time imported from the Indies, and greatly eſteemed in peſtilential caſes.

ZÆA, or ZEA, in *Ancient Geography*, a very ancient town of Greece, in Bœotia. Steph. Byz.

ZÆTIA, or ZETIA, a town of Arcadia, N. of Megalopolis. It had two temples, one of Ceres, another of Diana.

ZÆZAR, in *Geography*, a town of Spain, in the province of Murcia; 22 miles N.W. of Murcia.

ZAFANIN, a town of Fez, near the coaſt of the Mediterranean; 35 miles S.E. of Melilla.

ZAFARANBOLI, a town of Natolia; 28 miles S. of Amaſieh.

ZAFFABEN, a word uſed by ſome of the chemical writers to expreſs putty.

ZAFFE IBRAHIM, in *Geography*, a town on the eaſt coaſt of Madagaſcar. S. lat. 17°.

ZAFFER, ZAFFRE, or SAFFRE, in *Chemiſtry*, is the reſiduum of cobalt, after the ſulphur, arſenic, and other volatile matters of this mineral have been expelled by calcination: ſo that it is a kind of calx or oxyd of cobalt, mixed with a portion of ſiliceous matter, of a grey or reddiſh colour; in which ſtate it is imported from Saxony. It is uſed to produce a very fine blue colour, when it is melted with fuſible and vitrifiable matters.

The blue colour produced by the vitrification of zaffer proceeds from the earth or calx of a ſemi-metallic ſubſtance contained in cobalt, called by chemiſts *regulus of cobalt*. This is proved by melting zaffer with a reducing flux, like any other roaſted ore, by which means the regulus will be obtained. The ſcoria in this fuſion has alſo a blue colour, proceeding from a portion of the calx of the regulus that is not reduced, but is vitrified together with the ſcoria. The calx, therefore, or metallic earth of the regulus of cobalt, is the ſole cauſe of the blue colour produced by zaffer.

But as this is contained in cobalt in various quantities, ſome zaffers produce more blue than others. The heterogeneous fixed matters contained in cobalts contribute, according to their quantity, not only to the greater or leſs intenſity of the blue colour, but alſo to its luſtre and beauty; and, therefore, thoſe who manufacture zaffer from cobalt make frequent eſſays of the roaſted ore, by mixing it with vitreous matters, in order to diſcover the intenſity and beauty of the blue colour.

Good cobalt calcined would form too deep a blue, and almoſt a black glaſs, if it were not previouſly mixed with a certain quantity of vitreous frit. In the manufacture of zaffer, therefore, the calx of cobalt, the ſtrength of which has been determined by previous eſſays, is mixed with ſuch a quantity of ſand, or of powdered flints and quartz, that with the addition of ſome ſaline flux, a deep blue glaſs may be formed. See COBALT.

The zaffer that is commonly ſold, and which comes from Saxony, is a mixture of oxyd of cobalt with ſome vitrifiable earth: it is of a grey colour, and ſome zaffers are clearer than others, according to the intenſity of the colour which they are capable of producing.

Zaffer is employed in the manufacture of pottery and of porcelain, for painting the ſurface of the pieces of ware, upon which it is applied, together with ſome ſaline flux, previouſly to the baking or glazing, that the ſame fire may vitrify this colouring material.

The blue of zaffer is the moſt ſolid and fixed of all the colours that can be employed in vitrification; it ſuffers no change from the moſt violent fire. It is ſucceſsfully employed to give ſhades of blue to enamels, and to the cryſtal glaſſes made in imitation of ſome opaque and tranſparent precious ſtones, as the lapis lazuli, the turquois, the ſapphire, and others of this kind.

To prepare zaffer for uſe in the glaſs-trade, put it in groſs pieces into earthen pans, and let it ſtand half a day in the furnace; then put it into an iron ladle to be heated red-hot in the furnace; take it out while thus hot, and ſprinkle it with ſtrong vinegar: and when cold, grind it on a porphyry to an impalpable powder, then throw this into water

water in glazed earthen pans; and when it has been well ſtirred about, let it ſettle and pour off the water: repeat this waſhing often, and the foulneſs of the zaffer will be thus wholly ſeparated. Dry the powder, and keep it for uſe.

ZAFFRAM, a word uſed often by authors to expreſs ſaffron, but ſometimes as the name of other things of a yellow colour; thus ochre was called by this name.

ZAFFRAMEN, a word uſed by ſome medical writers to expreſs ſaffron.

ZAFRA, in *Geography*, a town of Aſiatic Turkey, in the government of Maraſch; 15 miles S.W. of Tarſus.—Alſo, a town of Aſiatic Turkey, in the government of Trebiſond, on the Black ſea; 50 miles N.W. of Trebiſond.—Alſo, a town of Spain, in Eſtremadura; 22 miles E. of Xeres de los Caballeros.

ZAFRANIA, in *Colours*, a term uſed by the Greeks to expreſs the yellow of ſaffron. The barbarous writers of the after-ages tranſlated it into the Latin *crocietas*, or ſaffron colour.

The later Greek writers only uſe it, and they have taken it literally from the Arabians, Avicenna, and Serapio. This was a term uſed by them to expreſs the colour of the fine bole-armenic of Galen, which they tell us ſtained paper to a fine and beautiful gold colour.

ZAGA, in *Botany*, Poiret in Lamarck Dict. v. 8. 831. (Zaga Pohon, or *Corallaria latifolia*, Rumph. Amboin. v. 3. 175. t. 110.)—This is one of thoſe trees, whoſe hard red ſeeds are uſed for ornament, in the form of necklaces, bracelets, &c. by the natives of tropical climes, and even by the inhabitants of the moſt poliſhed countries of Europe, as faſhion, from time to time, is pleaſed, in her capricious wiſdom, to ordain. Such are the beautiful red and black ſeeds of *Abrus precatorius*, of which there is a pearly white variety, of rare occurrence. Such alſo are thoſe much larger ſeeds, of the ſame combination of colours, produced by the Weſt Indian genus ORMOSIA. (See that article.) The *Zaga* of Rumphius and Poiret is evidently a papilionaceous plant, with pinnate *leaves*, compoſed of about three pair of elliptic-oblong, entire, ſtalked, rather large leaflets, with an odd one. *Flowers* in panicled terminal cluſters. *Legumes* elliptic-oblong, pointed, hard and ſmooth, each containing one, rarely two, hard, ſhining, round *ſeeds*, all over of the colour of red coral, larger than thoſe of *Adenanthera pavonia*, being as broad as the fore-finger nail, and deſtitute of the defined circumſcribed area, for which the ſeeds of the *Adenanthera* are remarkable.

ZAGALA, in *Geography*, a town of Spain, in Eſtremadura; 25 miles S. of Alcantara.

ZAGAN, a town of the principality of Georgia, in the province of Kaket; 3 miles N. of Teflis.—Alſo, a town of Perſia, in the province of Irak; 12 miles S.W. of Hamadan.

ZAGARA, a mountain of Greece, in Livadia, anciently called Helicon.

ZAGATHAI, a name given from the ſecond ſon of Zingis to Great *Bucharia;* which ſee.

ZAGATIS, in *Ancient Geography*, a river of Aſia, in the Colchide, according to Arrian, who fixes its mouth between Athenæ and Anchiane Regia.

ZAGAWA, in *Geography*, a city of Africa, in Bornou, on a river which runs into the ſame lake, where the Niger is by ſome ſuppoſed to be loſt. N. lat. 19° 10′. E. long. 25° 50′.

ZAGGOS, a mountain of Africa, in which are ſome mines of ſalt; 100 miles S. of Algiers.

ZAGHARA, a town of Africa, in Bornou.

ZAGI. See ZEGI.

ZAGILLONITIS, in *Ancient Geography*, a country of Aſia, in Cappadocia. Strabo.

ZAGING, in *Geography*, a town of Auſtria; 3 miles N. of St. Polten.

ZAGIRA, in *Ancient Geography*, a town of Aſia, in Paphlagonia, at a ſmall diſtance from the ſea. Ptol.

ZAGLIA, in *Geography*, a town of the iſland of Corſica; 8 miles S.E. of Calvi.

ZAGORA, a town of European Turkey, in Romania, on a lake which communicates with the Black ſea; 12 miles S.W. of Burgas.

ZAGORA, in *Ancient Geography*, a town of Aſia, in Paphlagonia, on the coaſt of the Euxine ſea, between Caruſa and the mouth of the river Halys, according to the Periplus of Arrian.

ZAGOROLO, in *Geography*, a town of the Popedom, in the Campagna di Roma; 3 miles W. of Paleſtrina.

ZAGOROW, a town of the duchy of Warſaw; 20 miles S. of Kaliſch.

ZAGRAB. See AGRAM.

ZAGROS, MOUNT, a mountain of Perſia, in the province of Irak, along the brink of which extends the diſtrict of Kurrend, from the vicinity of Holwan to the village of Goour. It is covered with foreſts of oak, and inhabited by an extraordinary race of men, among whom ſubſiſt cuſtoms ſimilar to thoſe of the Kadmuſia in Syria, deſcribed by Volney. It is ſaid that in their nocturnal feſtivals, the garments of the fair ſex, at the expiration of a certain period, are thrown into a heap, and jumbled together. The lights are then extinguiſhed, and the clothes being regularly diſtributed among the men, the candles are relighted; and it is ſettled by the rules of the ſociety, that the lady muſt patiently ſubmit to the embraces of the perſon who has become poſſeſſed of her dreſs, whether father, ſon, huſband, or brother. The lights are then once more extinguiſhed, and all of this licentious tribe paſs the remainder of the night in the indulgence of the moſt promiſcuous luſt.

ZAGRUS, or ZAGRIUS MONS, in *Ancient Geography*, a mountain of Aſia, in Media. It made a part of mount Taurus, commencing in Armenia, and extending as far as the Chalonitide, between Media and Adiabene. Pliny. It is reckoned by Ptolemy one of the moſt conſiderable countries in Media. According to Strabo, it was this chain of mountains which touched the Niphates, and ſeparated Media from Babylonia.

ZAGU, in the *Materia Medica*, the name given by ſome authors to the ſago-tree, the *todda pauna*, or *palma fructi pruniforme*.

ZAGUANANAS, in *Geography*, a river of conſiderable length in New Mexico, which flows from the ſame ſources with the Rio Bravo, and joins the *Colorado;* which ſee.

ZAGYTIS, in *Ancient Geography*, a country of Africa, in Libya. Steph. Byz.

ZAHARA, in *Geography*, a town of Spain, in the province of Seville. In 1407, this town was taken from the Moors; about two years after the Moors retook the town, but not being able to reduce the citadel abandoned it. In 1481, it was ſurpriſed by the Moors, in a dark ſtormy night; moſt of the inhabitants were put to the ſword, and the reſt ſent ſlaves to Grenada; 36 miles S.E. of Seville. N. lat. 36° 50′. W. long. 5° 33′.

ZAHARA. See SAHARA.

ZAHIA, a word uſed by the Arabian phyſicians to expreſs a ſort of dyſentery, in which there was a very large

large discharge of blood from the rectum, attended with an evident sensation of abrasion, or pain in the bowels.

ZAHNA, in *Geography*, a town of Saxony; 8 miles N.E. of Wittenberg. N. lat. 51° 56′. E. long. 12° 54′.

ZAHRADKA, a town of Bohemia, in the circle of Czaslau; 17 miles S.S.W. of Czaslau.

ZAHRINGEN, an ancient citadel in the Brisgau, which gave the title of duke to a noble family that became extinct in the 13th century; 1 mile N. of Friburg.

ZAIBAC, one of the many names by which the ancient chemists have called mercury.

ZAIDIR, a name by which some of the chemical writers have called verdigrise, or the rust of copper; and others, the metal itself; and some brass.

ZAIM and TIMAR, lordships granted under those names in the Ottoman empire for life, as military rewards and encouragements. Those who possess a zaim, or timar, are honoured with the title of aga; they are bound to a military personal service, and obliged to bring with them to war one or more *gébélis*, horsemen or foot-soldiers, armed and equipped according to the revenue and extent of the lordship. The timar differs in no respect from the zaim, except that it is of less value, and that the aga who possesses it does not arm as many horsemen and foot-soldiers as the other. The number of zaims in Turkey in Europe is 914, and that of the timars is 8356. Nearly the same number is reckoned in Asia, which furnishes, with the *gébélis*, a militia of upwards of 60,000 men, better disciplined, and more inured to war than the spahis and the janizaries. This militia for a long time constituted the principal force of the Ottoman empire: to this principally the first sultans were indebted for the astonishing success of their arms, and the rapid progress which they made in a little time in Asia, in Europe, and even in Africa.

On the death of a zaimat, or a timariot, the sultan is to draw a year's revenue from the lordship, and nevertheless, give it up again to the son of an aga, a spahis, or any other military man, especially to him who, by a brilliant action, has distinguished himself in battle, who has first mounted to the assault, penetrated into the enemy's intrenchments, killed a great number of infidels, or contributed to put them to the rout. But since the sultans prefer to the fatigues of war and the dangers of battle the tranquillity of their seraglio, and the pleasures of their harems; and more especially since avarice and a love of gain have caused to be put up to auction the places intended for the recompence of valour and merit, the lordships are become the patrimony of the rich and of intriguers. Thus the best institutions degenerate; thus the Mussulman, formerly intrepid and valiant, becomes merely a vile plunderer, or a ferocious assassin; and the Ottoman armies, so formidable to their enemies, are become an object of contempt or pity, and this vast empire would no longer exist, if some European power were not interested in its support.

ZAIN, in *Horses*, a term used by the French to signify a horse of a dark colour, neither grey nor white, and without any white spot or mark upon him in any part. See HORSE.

ZAINAH, in *Geography*, a town of Algiers, in the province of Constantina; supposed, from some considerable ruins, to have been Zama, an ancient and royal city of Numidia; 25 miles S.E. of Seteef.

ZAINE, or *Wadel Berber*, a river of Africa, which runs into the Mediterranean, N. lat. 36° 54′. E. long. 9° 16′.

ZAIRA KAKONGO, an island in the Atlantic, at the mouth of the river Zaire.

ZAIRAGIA, or ZAIRAGIAH, a kind of divination in use among the Arabs; performed by means of divers wheels, or circles, placed concentric to one another, and noted with several letters, which are brought to answer to each other, by moving the circles according to certain rules.

This is also called *zariah*, because the circles of this machine, which are called *mutazariat*, *laflak*, &c. are intended to correspond to the orbs of the planets, and the atmospheres of the several elements.

ZAIRE, or SAIRE, in *Geography*, a river of Africa, which rises in the country of Matamba, about S. lat. 10°, and takes a northerly course to lat. 3°, in the kingdom of Congo; after which it takes a south-westerly direction, and runs into the Atlantic, S. lat. 6°. E. long. 12° 20′.

It has been an important question, with regard to which geographers have entertained various opinions, what are the course and termination of the Niger. The ingenious geographer, Mr. Rennell, on comparing the various accounts of the progress of the Niger beyond Houssa, declared his opinion to be, that its waters had no communication, either with the river Nile, as was thought, or with the sea, as others imagined; but that they were spread out into a great lake in Wangara or Ghana, and evaporated by the heat of the sun. (See NIGER.) Mr. Park, the late African traveller, directed his particular attention to this subject, and was induced to conclude that the Congo would be found to be the termination of the Niger from the following considerations: 1. The total ignorance of all the inhabitants of North Africa respecting the termination of that river. If the Niger ended any where in North Africa, it is not easy to account for this total ignorance, and for their so generally describing it as running to the Nile; and in fact, to a country with which they had not any acquaintance. A second consideration has been already suggested under the article ZAD. A third is deduced from the general supposition that the river of Dar-Kulla, mentioned by Mr. Browne in his "Travels," was the Niger, or at least that it communicated with that river; and this, it is said, would be exactly the course which the Niger ought to take in order to join the Congo. 4. The quantity of water discharged into the Atlantic by the Congo cannot be accounted for on any other principle, but that it is the termination of the Niger. If the Congo derived its waters entirely from the S. side of the mountains, which are supposed to form the belt of Africa, one would naturally suppose, that when the rains were confined to the N. side of the mountains, the Congo, like the other rivers of Africa, would be much diminished in size; and that its waters would become pure. On the contrary, the waters of the Congo are at all seasons thick and muddy. The breadth of the river, when at its lowest, is one mile, its depth is fifty fathoms, and its velocity six miles *per* hour. 5. The annual floods of the Congo commence before any rains have fallen south of the equator, and agree correctly with the floods of the Niger, calculating the water to have flowed from Bambarra at the rate of three miles *per* hour. Mr. Park, during his residence in Scotland, became acquainted with a Mr. George Maxwell, formerly an African trader, who was well acquainted with the whole western coast of Africa, more especially S. of the equator, and had published a chart of the river Congo. Mr. M. had been led by a variety of circumstances to conjecture that the source of the Congo lay considerably inland, and far to the north; and from a perusal of Mr. Park's travels

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he concluded, that the Congo and the Niger were one and the fame ftream. Mr. Maxwell's reafoning confirmed Mr. Park in his opinion; and in this opinion he perfevered to the end of his life.

Since the difcoveries of Mr. Park, it is very generally allowed that the courfe of the Niger is from weft to eaft; and his opinion with regard to its termination in the Congo, or, as it is fometimes called, the Zaire, has received a confiderable degree of confirmation from the account of the Congo given by Mr. Maxwell. "Before ever the Niger came to be the topic of converfation," fays Mr. M., "it ftruck me, that the Congo drew its fource far to the northward, from the floods commencing long before any rains take place S. of the equator; fince it begins to fwell perceptibly about the latter end of October, and no heavy rains fet in before December, and about the end of January, the river muft be fuppofed to be at its higheft. At no time, however, can the rains to the fouthward of the line be compared with thofe in the Bight of Guinea, where fhips are obliged to have a houfe erected over them during thefe months."—"If the Niger has a fenfible outlet, I have no doubt of its proving the Congo, knowing all the rivers between Cape Palmas and Cape Lopas to be inadequate to the purpofe; nor need the immenfe courfe of fuch a river furprife us, when we know that the river St. Lawrence, contemptible in fize compared with the Congo, encompaffes the whole of North America, iffuing through a chain of lakes. But inftead of feven or eight lakes, the Congo may be fuppofed to pafs through feventeen or eighteen; which will folve any difficulty as to the floods of the Niger not immediately affecting the Congo." He adds, the river Congo, compared with other rivers, muft rank as the third or fourth in magnitude. Confidering the force of the current it produces in the fea, carrying out floating iflands fixty or feventy leagues from the coaft, the Amazon or Plata only can cope with it. At the diftance of 600 miles from its mouth, the Congo traders report that it is as large at the place from which they came, and that it went by the name Enzaddi, as it does among all the nations upon the coaft. If the fhallow water oppofite to Suenda fhould be thought to detract from the affumed fize of the Congo, it fhould be confidered, that the river there is fpread out ten miles in width, the middle channel of which has never been accurately founded. "It has long been my opinion, that Leyland's or Molyneux ifland at Embomma, (a fettlement on the banks of the Congo, diftant thirty leagues from its mouth,) either of which might be rendered as impregnable as Gibraltar, at a very fmall expence, could be a choice ftation for eftablifhing an extenfive commerce with the interior of Africa. Indeed, if the idea of the Congo being the outlet of the Niger prove fo upon trial, we may confider it is an opening defigned by Providence for exploring thofe vaft regions, and civilizing the rude inhabitants." The Congo appears from other teftimonies to be a river of the firft clafs, and larger, probably, than the Nile. The waters of the Congo, it is faid, may be diftinguifhed at fea more than thirty leagues from the coaft; and the water is frefh at the diftance of thirty miles. If thefe accounts are thought to be exaggerations, it is a general opinion among navigators that this river has a wonderful fize and force. All accounts concur in reprefenting that the ftream of the Congo is of a more uniform height, and fubject to much lefs variation from the dry and rainy feafons, than any tropical river which is known; and that on a comparifon with fuch rivers, it may be confidered to be in "a perpetual ftate of flood." The average rifing of the Ganges in the rainy feafon is ftated by major Rennell to be thirty-one feet, being almoft the fame with that of the Nile; whereas, the difference between the higheft point of the Congo about February, and the loweft, in September, is only about nine feet; and the river, at the latter period, has all the appearance to a ftranger of being in full flood. It is this remarkable peculiarity which diftinguifhes the Congo from other great rivers of a fimilar defcription, and which leads to important conclufions with regard to its origin and caufe. "In fupport then of the hypothefis which identifies the Congo with the Niger, the following arguments deduced from the preceding facts and obfervations may be alleged: 1. The great magnitude of the Congo. 2. The probability that this river is derived from very remote fources, perhaps confiderably north of the equator. 3. The fact, that there exifts a great river N. of the equator (the Niger), of which the termination is unknown, and which may, perhaps, form a principal branch of the Congo.

"Such being the evidence in favour of the hypothefis refpecting the Congo, the objections muft be admitted to be weighty and formidable: the principal of thefe are, 1. That it fuppofes the courfe of the Niger to be through the vaft chain of the mountains (anciently *Montes Lunæ*), the great central belt of Africa."—"It is difficult to underftand how the Niger could penetrate this barrier, and form a paffage fouthwards. 2. The courfe of the Niger, eftimated from its fource in the mountains of Senegal, (fuppofing it to be the fame river with the Congo, and to flow by Wangara and Cafhna, through the centre of Africa into the Atlantic,) would be confiderably more than 4000 miles. But the courfe of the Amazon, the greateft river in the old or new world, is only about 3500 miles; and although the exiftence of a river confiderably greater than any yet known may be within the limits of phyfical poffibility, yet fo improbable a fuppofition ought not to be adopted upon flight or conjectural reafoning, or upon any thing much fhort of diftinct and pofitive proof."

The editor of Mr. Park's Travels, &c. in 2 vols. 8vo. 1816, which we are now citing, very laudably expreffes a hope, "that this diftinguifhed river, which hitherto has been only known as one of the greateft marts of the Slave Trade, may at length be rendered conducive to objects of civilization and fcience; and that fome ufe will now be made of this great inlet into Africa, for the purpofe of exploring a part of that continent which as yet is entirely unknown; or, at leaft, of obtaining more complete and authentic information relative to the Congo itfelf, which muft unqueftionably be confidered as a very curious and interefting fubject of inquiry."

Another opinion with regard to the termination of the Niger has been advanced by M. Reichard, a German geographer, and publifhed in the "Ephemerides Geographiques," at Weimar, in Auguft 1808. This opinion is, that the Niger, after reaching Wangara, takes a direction towards the fouth, and being joined by other rivers from that part of Africa, makes a great turn from thence towards the fouth-weft, and purfues its courfe till it approaches the north-eaftern extremity of the gulf of Guinea, where it divides, and difcharges itfelf by different channels into the Atlantic; after having formed a great Delta, of which the Rio del Rey conftitutes the eaftern, and the Rio Formofa, or Benin river, the weftern branch. This hypothefis, though it diminifhes the diftance which the Niger has to flow in its courfe to the Atlantic, does not remove the objection arifing from the Niger's being conceived to penetrate the Kong mountains. But we muft not purfue this fubject any farther. For the lengths of the courfe of the moft noted rivers, fee RIVER.

ZAKA. See SCHAREDSJE.

ZAKEPH GADHOL, *Rex Pauperrimus*, one of the Hebrew accents, fometimes denoting no kind of paufe, and marked over a letter thus (ב֕).

ZAKEPH *Katon Rex*. one of the Hebrew accents, conftituting either a *comma* or femicolon, and marked over a letter thus (ב֔).

ZAKERZEZIN, in *Geography*, a town of Kurdiftan; 26 miles N.N.W. of Van.

ZAKIEH, a town of the Arabian Irak, on the Tigris; 10 miles N. of Korna.

ZAKLIKOW, a town of Auftrian Poland, in Galicia; 40 miles S. of Lublin.

ZAKROCZYN, or SAKROTSCHIM, a town of the duchy of Warfaw, on the Narew. In 1794 the confederate Poles were defeated here by the Ruffians; 40 miles N.W. of Warfaw.

ZAL ALEKSANDROVSKOI, a bay of the Cafpian fea; 260 miles S.S.E. of Aftrachan. N. lat. 43°. E. long. 51° 14′.

ZALA, in *Botany*, fo called by Loureiro, Cochinch. 405, from ζαλη, *a tempeft*, or *agitation of the fea*, becaufe the plant floats, and is driven about, at the mercy of the winds and waves. This is no other than the PISTIA of Linnæus (fee that article); where the generic characters, as corrected by Schreber, come fufficiently near to thofe of Loureiro, to leave no doubt in the mind of the reader, allowance being made for the peculiarities of ftructure in fo fingular a flower.

ZALA, in *Ancient Geography*, a town fituated in the vicinity of Amafæa, which was a town of the Peloponnefus, in Achaia Propria.

ZALA, in *Geography*. See WADAN.

ZALACA, in *Ancient Geography*, a town of Afia, in the interior of Media. Ptol.

ZALACUS, a town of Africa, in Mauritania Cæfariana. Ptol.

ZALACUS *Mons*, (*Van-nafh-reefe*,) mountains of Mauritania, at fome diftance from and to the S. of the river Chinalaph. Ptol.

ZALAKNA, in *Geography*, a town of Tranfylvania; 14 miles W. of Weiffemburg.

ZALAMEA, a town of Spain, in the province of Seville; 38 miles W.N.W. of Seville.

ZALAMEA *de la Serena*, a town of Spain, in the province of Eftremadura. This town was anciently called Ilipa, and many veftiges remain of its former fplendour; 27 miles N.E. of Llerena.

ZALANTZ, a town of Hungary; 10 miles S.E. of Cafchau.

ZALAPA, in *Ancient Geography*, a town of Africa Propria, S. of Adrumetum. Ptol.

ZALESCE, in *Geography*, a town of Auftrian Poland, in Galicia; 32 miles S. of Lemberg.

ZALEUCUS, in *Biography*, a philofopher and legiflator of Greece, and founder of the Locrian ftate, flourifhed in the 7th century B.C. He was of obfcure birth, and lived in fervitude as a fhepherd; but his extraordinary abilities and merit attracted notice even in his humble ftation, and advanced him to the government. His laws were deemed fevere, but being adapted to the circumftances and manners of the Locrians, their conftitution was for feveral ages highly celebrated. His difcipline was rigorous, fo that he prohibited the ufe of wine, otherwife than as a medicine; and he ordained, that adulterers fhould be punifhed with the lofs of their eyes. When his fon had incurred this penalty, he blended paternal lenity with a pretence of maintaining the authority of the laws, by ordering his fon to be deprived of one eye, and by fubmitting to the lofs of one of his own eyes. In order to fecure the permanent ftability of his fyftem of legiflation, he required that a perfon who propofed a change in any one of them fhould come before the affembly with a cord about his neck, that he might be inftantly ftrangled, if upon examination the old law were preferred. Valer. Max. Diod. Sic. Laert. Brucker by Enfield.

ZALGIN, in *Geography*, a town of the ifland of Cuba; 47 miles N. of St. Jago.

ZALIKARA, the moft confiderable city of Mingrelia, fituated on the right bank of the Hippus, which rifes in the higheft mountain of the Soane, not far from the fource of the Phafis, flows through Letfghuani, divides Mingrelia from Iberia, and enters the Phafis near the Tredia: an open place, at the confluence of the Hippus and Phafis, well peopled by different nations, particularly Jews.

ZALISCUS, in *Ancient Geography*, a river of Afia, in Galatia. The mouth of this river in the Euxine fea lay between Cyptafia and Galorum.

ZALISSA, a town of Afiatic Iberia. Ptol.

ZALLANT, in *Geography*. See SALLAND.

ZALSSING, a town of Auftria; 5 miles N.W. of Aggfpach.

ZALUZIANSKIA, in *Botany*, fo named by Necker, in "Act. Palat. v. 3. phyf. 303," according to Willd. Sp. Pl. v. 5. 538, is no other than MARSILEA *quadrifolia*, which the reader will find in vol. xxii. The above name is defigned, as we prefume, to commemorate a Polifh botanift, author of *Methodi Herbariæ*, publifhed at Prague, anno 1592, in 4to., and at Frankfort in 1604. This work is fpoken of by Haller, *Bibl. Bot.* v. 1. 387, as a tranfpofition of the arrangement of Dodonæus, without any improvement or additional information.

ZAM, in *Geography*, a town of Grand Bucharia; 85 miles N.W. of Balk.

ZAMA, a town of Peru, in the diocefe of Arequipa; 30 miles N. of Arica.

ZAMA, in *Ancient Geography*, a town of Africa Propria, 5 journeys from Carthage. This town, to which ancient authors give the title of royal and a fortrefs, is famous in the wars of Jugurtha and Juba, and more efpecially on account of a battle between the Carthaginians under Hannibal and the Romans, commanded by Scipio, in the year 551 of the Republic. At the time when this town was in a flourifhing ftate, it was affigned to Numidia. Cornelius Nepos fays, that it was 300 miles from Adrumetum. Appian fays 3000 ftadia. It was fituated on a plain, and owed its ftrength to its fortifications more than to its fituation. Hirtius fays, that it was the ordinary refidence of king Juba, where he had his wives, children, and treafures. Pliny fays, that it became a Roman colony.

ZAMA, a town of Cappadocia, in the prefecture of Chamane.—Alfo, a town of Afia, in Mefopotamia. Ptol.

ZAMAMIZON, a town of Africa Propria, between the town of Tabraca and the river Bagradas. Ptol.

ZAMBOSE, or CUMANA, in *Geography*, a river of Africa, which rifes in the interior parts of Mocaranga, and runs into the Indian fea at feveral mouths: the principal of which takes the name of Luabo. S. lat. 19°. E. long. 37°.

ZAMBOZIN, a town of Congo; 24 miles S.S.W. of St. Salvador.

ZAMBRANO, JUAN LUIS, in *Biography*, a Spanifh painter, was born at Cordova in 1599. He was a difciple of Paolo de Cefpedes, and was a fuccefsful follower of the ftyle of that mafter. His principal works are in the cathedral at Cordova, and in the church of the convent of Los Martyros, where he painted two altar-pieces, reprefenting the ftoning of St. Stephen, and the martyrdom of St. Acifclo and St. Victoria. In the colegio di Santa Catalina is a fine picture by him of a guardian angel, and a St. Chriftopher, which Palomino defcribes as defigned in the great ftyle of M. Angelo. He paffed the latter part of his life at Seville, where he painted feveral altar-pieces for the church of St. Bafil, and died in that city in 1639, at the age of 40.

ZAMBROKRI, in *Geography*, a town of Hungary; 14 miles S.W. of Rofenberg.

ZAMBROW, a town of the duchy of Warfaw; 80 miles N.E. of Warfaw.

ZAMECH, a name given by fome writers to the lapis lazuli.

ZAMETUS, in *Ancient Geography*, a mountain of Arabia Felix. Ptol.

ZAMFARA, or ZANFARA, in *Geography*, a town of Africa, and capital of a kingdom of the fame name; 170 miles E.N.E. of Wangara. N. lat. 18° 20′. E. long. 16° 15′.

ZAMIA, in *Botany*, from ζημια, *damage*, or *lofs*. This name, which firft occurs, as the appellation of a genus, in the Gen. Pl. ed. 6. of Linnæus, is taken from Pliny, who ufes it for fuch cones of the fir as "fplit while they are upon the tree," and, as he fays, "require to be taken off, that they may not injure the reft." This fhould feem to apply to the male catkins, however falfe the phyfiology of Pliny, and the practice founded upon it, may be. Our *Zamia* anfwers to his, merely in the cone-like form of its fructification, which, being male on one plant, and female on another, exhibits in the former the appearance of lofs, or fterility, like the male catkins of the fir.—Linn. Gen. 574. Suppl. 68. Schreb. Gen. 778. Willd. Sp. Pl. v. 4. 845. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 410. Brown Prodr. Nov. Holl. v. 1. 348. Purfh 648. Juff. 16. Poiret in Lamarck Dict. v. 8. 831. Lamarck Illuftr. t. 892. Gærtn. t. 3.—Clafs and order, *Dioecia Polyandria*. Nat. Ord. *Filices*, Linn. Juff. *Cycadeæ*, Perfoon, Brown.

Gen. Ch. Male, *Cal.* Catkin ovate, teffellated-fcales horizontal, obtufe, thickened towards the end, permanent. *Cor.* none. *Stam.* Filaments none; anthers numerous, feffile, crowded on the under fide of each fcale, efpecially towards the extremity, elliptical, fmooth, of two valves and one cell, fplitting lengthwife.

Female, *Cal.* Catkin ovate, teffellated: fcales horizontal, obtufe, more or lefs peltate, permanent. *Cor.* none. *Pift.* Germens two, oval, feffile, horizontal, inflexed, on the under fide of each fcale, near the extremity; ftyle very fhort, fomewhat conical; ftigma obtufe, undivided, pervious. *Peric.* Drupa roundifh, fomewhat angular, of one cell. *Nut* hard, roundifh or elliptical, of one cell.

Eff. Ch. Male, Catkin teffellated. Scales abrupt. Anthers oval, feffile at the under fide of each fcale. Female, Catkin teffellated. Scales peltate. Drupas two, at the under fide of each fcale.

Obf. Mr. Brown, to whom we are obliged for the remark of the ftyle being finally pervious, records an idea of the late Mr. Dryander, that the American *Zamiæ*, which conftitute the original genus, having more perfectly peltate fcales to the male *catkin*, and the *anthers* affembled in two diftinct maffes might poffibly form a diftinct genus from the Cape and New Holland fpecies; more efpecially as in thefe American plants, the *leaflets* are each manifeftly articulated with a projection from the main rib of the leaf; whereas in the others they are either very obfcurely jointed, or perfectly decurrent. We conceive, however, that they all together compofe a very diftinct genus, which cannot, without violence to nature, be divided. It is neareft akin to *Cycas*, but differs effentially in the female part of the fructification being a *catkin*, whofe fcales bear two *germens* underneath; inftead of an affemblage of *fronds*, or leafy *receptacles*, bearing an indeterminate number upon their margins. The *herbage* is perennial, generally without a *ftem*. *Leaves* abruptly pinnate, fingularly hard, rigid, and often fpinous; rarely lobed. *Catkins* radical, ftalked.

It being extremely difficult to obtain and to compare good fpecimens of the different fpecies, as well as to detect and define their effential characters, authors have not very clearly defcribed them. Jacquin has publifhed magnificent figures of feveral; but their moft fatisfactory marks require to be fought at an earlier period of their growth, and in more minute parts, than he has generally exhibited.

1. Z. *cycadifolia*. Sago-palm-leaved Zamia. Jacq. Fragm. 27. t. 25, 26. Willd. n. 1.—Leaflets very numerous, two-ranked, linear, entire, with fimple fpinous points; common ftalk femicylindrical, channelled, downy. Catkin of the fruit elongated, fomewhat cylindrical.—Native of the Cape of Good Hope. Cultivated in the Imperial gardens at Schoenbrun, but not mentioned by Mr. Aiton as known to our Englifh collectors. The thick globular fcaly head of the *root*, near a foot in diameter, bears numerous fpreading pectinate *leaves*, very much refembling, at firft fight, thofe of *Cycas revoluta*. The *ftalk* of each is, in its naked part, two feet long, as thick as a fwan's quill, all over downy, as is alfo its leafy portion, and the young leaflets themfelves. The full-grown *leaflets* are from 50 to 80, rigid, parallel, acute, pungent, each about three inches long; the lowermoft gradually fhorteft, and rather more diftant. The ripe *fruit*, brought from the Cape, is ovate-oblong, about fifteen inches in length, and five in diameter, brown, each *fcale* bearing two ovate, angular, orange-coloured *drupas*, about an inch long, their points directed towards the bafe of the fcale. *Nut* not much fmaller, ovate, angular.

2. Z. *pungens*. Needle Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 1. Willd. n. 2. Poiret n. 3. (Palma fobolifera ægyptia, foliis lævioribus, fructu nigro; Till. Pif. 129. t. 45.)—Leaflets awl-fhaped, fpreading, ftraight, rigid, pointed, entire; their outer margin rounded at the bafe; common ftalk nearly cylindrical, unarmed.—Native of the Cape of Good Hope, from whence it was brought by Mr. Maffon, to Kew garden, in 1775, but has not yet flowered. The *leaflets* are very thick and coriaceous, much fewer than in the preceding fpecies, moftly oppofite, four or five inches long, and one broad; their under furface fomewhat ftriated; the upper fmooth and fhining; margin quite entire; point fimple, fpinous, ftout and rigid.

3. Z. *tridentata*. Three-toothed Zamia. Willd. n. 3.—Leaflets linear, obfcurely furrowed, fmooth, with three fpinous teeth at the end; common ftalk femicylindrical, channelled.—Suppofed to be a native of the Cape of Good Hope. The *leaflets* are fourteen to fixteen pair, linear, tapering at each end, with two lanceolate, pointed, terminal teeth, and a third fituated a little lower at the outer edge. *Common ftalk* fmooth. *Willdenow*. No other author appears to know this fpecies. We have fpecimens in the herbarium of the younger Linnæus, without name, indication of their native country, or any traces of fructification, which anfwer

anfwer to the above characters; except the *leaflets* being more numerous, fometimes with a fimple fpinous point only, on the fame ftalk with others that have two or three, very rarely four; and in one inftance the leafy part of the common *footftalk* is fhaggy with foft hairs. Each *leaflet* is two, or two and a half inches long, thick-edged and flightly revolute, entire, except the above-mentioned points; fmooth on both fides; furrowed beneath; tapering at the bafe, and fomewhat decurrent at its infertion. See n. 15.

4. Z. *anguftifolia*. Narrow-leaved Zamia. Jacq. Coll. v. 3. 263. Ic. Rar. t. 636. Willd. n. 4. Poiret n. 6.—Leaves linear, elongated, entire, obtufe, with two terminal callous points; common ftalk femicylindrical. Fruit ovate, pointed.—Native of the Bahama iflands; cultivated at Schoenbrun, where it was raifed from feed, and bore flowers and fruit, the catkins being about eight months in going through their different ftages. The *root* is fcarcely bigger than a large radifh; its ovate crown enveloped in a few pointed, very broad, fcales. *Leaves* about a yard high, with flender ftalks and *leaflets;* the latter drooping, a fpan long, and two lines broad. *Catkins* three inches long, on ftalks about the fame length; the male ones moft flender, and nearly cylindrical. *Fruit* three inches long, of a thick ovate, or elliptical figure, with a blunt point. *Drupas* concealed, red.

5. Z. *tenuis*. Slender Zamia. Willd. n. 5.—"Leaflets linear, obtufe, fomewhat revolute; tapering at the bafe; with one or two obfolete teeth near the extremity; common ftalk triangular, fmooth."—Native of the Bahama iflands. Willdenow faw a living male plant. *Leaflets* about fourteen pair; the upper ones furnifhed, near the point, with one or two very inconfpicuous teeth. An intermediate fpecies between the laft and the following; agreeing nearly with Z. *anguftifolia* in the form of its *leaflets*, but they are broader, and their *ftalk* is triangular: the *leaflets* are narrower than thofe of the following, neither are they minutely ferrated towards the point; but the *ftalks* are fimilar. *Willdenow.*

6. Z. *media*. Intermediate Zamia. Jacq. Hort. Schoenbr. v. 3. 77. t. 397, 398. Willd. n. 6. Poiret n. 7.—Leaflets linear-lanceolate, obtufe, flat; obfcurely ferrated towards the point; common ftalk triangular, fmooth.—Native of the Weft Indies; cultivated at Schoenbrun. The crown of the *root* is as big as the fift. *Leaves* two feet long, befides their naked *ftalk*, which is half as much. *Leaflets* from fourteen to twenty pair; five inches long, and one-third or half an inch broad, flat, for the moft part entire, except a few fhallow diftant ferratures towards the extremity, which is bluntifh, and without any fpinous termination. *Female catkins* on fhort thick ftalks, ovate, with a blunt point. *Fruit* oval, brown, rough, three inches long. *Jacquin.* That author confiders the prefent fpecies as allied, on the one hand, to his *anguftifolia* (fee n. 4.), and on the other to *integrifolia*, n. 8. Still we cannot queftion its being fpecifically diftinct from both.

7. Z. *debilis*. Lax-leaved Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 2. Willd. n. 7. (Palma prunifera humilis non fpinofa, infulæ Hifpaniolæ, fructui jujubino fimilis, officulo triangulo; Commel. Hort. v. 1. 111. t. 58.)—Leaflets lanceolate, acute, pointlefs, ferrated towards the point; common ftalk triangular, fmooth.—Native of the Weft Indies, from whence it is faid to have been imported, in 1777, by the late Meffrs. Kennedy and Lee. It flowers in the ftove, in July and Auguft. The *leaflets* are five or fix pair, half an inch broad; though only two and a half or three inches long, and are diftinguifhed from all the foregoing by their confpicuous ferratures, all indeed near the end, the greater part of the leaflet being entire: the upper fide is fmooth and fhining; under furrowed or ftriated. Commelin originally raifed this fpecies from feed in the Amfterdam garden, and was informed that the *fruit* was reddifh, growing partly underground.

8. Z. *integrifolia*. Dwarf Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 3. Willd. n. 8. Purfh n. 1. Poiret n. 5. excluding the reference to Commelin. Jacq. Coll. v. 3. 261. Ic. Rar. t. 635. Lamarck t. 892, copied from Jacquin. (Z. pumila; Linn. Sp. Pl. 1659, excluding all the fynonyms.)—Leaflets fmooth, ftriated, lanceolate; rounded, obtufe, and finely ferrated at the end; tapering at the bafe. Common ftalk fmooth, fomewhat quadrangular.—Native of Eaft Florida, from whence it was introduced into the Englifh ftoves, by the celebrated John Ellis, efq. in 1768. Jacquin fays it grows alfo in Hifpaniola. The crown of the *root* is fometimes as thick as a man's arm, dividing below into feveral ftout branches and fibres. *Leaves* ufually about eighteen inches long; fometimes twice as much. *Leaflets* from ten to twenty pair, oppofite or alternate, each two and a half or three inches long, varying in breadth from one-quarter to three-fourths of an inch, entire, rather fhining, ftrongly ftriated on both fides, with many parallel ribs; the extremity rounded and pointlefs, with a greater or lefs number of flight tooth-like ferratures in proportion to its width. *Catkins* on fhort ftalks, ovate, clothed with dark brown pubefcence; the male ones about two inches long. *Fruit* three inches long, elliptical, pointed, downy; its *fcales* finally widely feparating, each of them peltate and angular, fupported by a rather flender angular ftalk, above an inch in length, and remaining long after the fruit is fallen. Each *drupa* is elliptical, about half an inch, or more, in length, with a fmall quantity of fweet orange-coloured pulp, and a large, rather pointed, nut. The *leaflets* are too ftrongly ferrated in Lamarck's plate; and rather broader and more luxuriant than ufual in Jacquin's, otherwife admirable, reprefentation. The male *catkins* are very frequently produced; the female ones we know only from dried fpecimens, and the works of Jacquin.

9. Z. *muricata*. Prickly-ftalked Zamia. Willd. n. 9.—"Leaflets oblong, pointed, fmooth, ftriated; ferrated from the middle to the extremity; common ftalk fpinous."—Gathered by Humboldt and Bonpland, in South America, near Porto Cabello. *Leaflets* about four pair, fix inches long; tapering at the bafe; ftriated and ribbed on both fides; fharply ferrated in their upper half. *Footftalk* channelled, armed with very fhort, blunt, fcattered fpines. *Willdenow.*

10. Z. *furfuracea*. Broad Rufty-leaved Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 477. ed. 2. n. 4. Willd. n. 10. Poiret n. 2. (Palma americana, foliis polygonati brevioribus, levitèr ferratis, et nonnihil fpinofis, trunco craffo; Pluk. Phyt. t. 103. f. 2. and t. 309. f. 5. P. americana, craffis rigidifque foliis; Herm. Parad. 210. t. 210. Palmifolia fructu clavato polypyreno; Trew Ehret, 5. t. 26.)—Leaflets elliptic-oblong, pointlefs; copioufly ferrated from the middle to the extremity; ftriated and hairy beneath; common ftalk fpinous.—Native of the Weft Indies. Plukenet faw it in the royal gardens at Hampton-Court in king William's time. It is ftill preferved in our ftoves, flowering towards autumn. The crown of the *root* is often a foot in diameter. *Leaves* from one to two feet long, exclufive of their prickly ftalks. *Leaflets* ufually eight or nine pair, three or four inches long, and one or one and a quarter broad, very rigid and coriaceous; fhining, and roughifh to the touch, on the upper fide; more

furrowed,

furrowed, and clothed with ſhaggy, chaffy pubeſcence, which gives them a ruſty or tawny hue, underneath. Their ſerratures, or teeth, are numerous, obtuſe, very irregular. *Catkins* ovate, hoary and downy, about three inches long, on *ſtalks* about the ſame length. Hermann ſays this plant produces a white inſipid gum.

11. Z. *ſpiralis*. Spiral Zamia. Saliſb. Prodr. 401. Willd. n. 11. Ait. n. 5. Brown n. 1.—Leaflets numerous, linear, very ſmooth, ſomewhat curved, with a few ſpinous teeth at the extremity. Catkins ſmooth, with pointed ſcales; thoſe of the male ones wedge-ſhaped. –Native of New South Wales, from whence ſeeds were ſent, in 1791, by Dr. John White, to the writer of this, and plants were raiſed from them in the following year, by the late Mr. Fairbairn, in Chelſea garden, being the firſt introduction of this ſpecies into Europe. The whole cone, filled with theſe nuts, was about half as large as a man's head; the nuts themſelves about the ſize of ſmall cheſnuts. They were ſaid to be eaten roaſted by the natives of New South Wales, but on being tried by our Engliſh ſettlers, occaſioned ſickneſs. Their flavour is certainly inferior to a cheſnut, and even to the nuts of *Cycas revoluta*, ripened in the biſhop of Wincheſter's ſtove at Farnham caſtle. The plants ſoon grew to a conſiderable ſize, and according to Mr. Aiton, this ſpecies flowers in the ſtove, in July and Auguſt. The *leaves* are very ſmooth, of a fine green, a yard or more in length, ſpreading, each compoſed of from thirty to forty pair of long narrow *leaflets*, tipped with from three to five ſpinous teeth. *Footſtalks* ſaid to be ſomewhat ſpiral. The *catkins* are ſtalked, cylindrical, about five inches long, and two in diameter, ſquarroſe, ſmooth, not downy nor hairy: *ſcales* of the *male ones* obovate-wedge-ſhaped, an inch long, with a ſhort, broad, ſharp, aſcending, poliſhed point; their upper ſide ſmooth and naked; under nearly covered with an uninterrupted heart-ſhaped aſſemblage of crowded, oval *anthers*, the ſize of poppy-ſeed: *ſcales* of the *female catkins* ſtalked, gibbous, two-edged and depreſſed, larger than the male ones, each tipped with an erect, ſword-ſhaped, pungent, ſmooth point, an inch long, and, as the fruit ripens, extended to three inches, the gibbous fleſhy part of the ſcale being then alſo much enlarged. *Germens* two, ovate, ſeſſile, cloſe together, at the inner edge of this fleſhy part of the ſcale, and directed horizontally inward. *Drupas* roundiſh, gibbous, an inch or inch and a half in diameter, orange-coloured, with a rather thin pulp, at leaſt in the dried ſtate, and a large, ovate, hard *nut*, not burſting, whoſe kernel, after keeping twenty-five years, is horny, ſemitranſparent, and as hard as the ſhell. Mr. Brown ſuſpects there may be two ſpecies confounded under Z. *ſpiralis*; one found in the neighbourhood of Port Jackſon, to which our deſcription and ſynonyms entirely belong, and which is from two to four feet high; the other, often ten feet in height, noticed by Mr. Brown on the ſouthern coaſt of New Holland, and which we have never ſeen. Mr. Brown remarks, that in both, the *catkins*, uſually ſolitary, ſometimes grow two together.

12. Z. *longifolia*. Tall-leaved Zamia. Jacq. Fragm. 28. t. 29. Willd. n. 12. Poiret n. 10.—Leaflets numerous, elliptic-lanceolate, pointleſs, entire, clothed with ſhaggy down. Scales of the male catkins wedge-ſhaped, with abrupt quadrangular points.—Native of ſouthern Africa, above a hundred miles from the Cape of Good Hope. Cultivated at Schoenbrun. The crown of the *root* is ſcaly, a foot in diameter, ſmooth. *Leaves* ſlightly ſpreading, from five to ſeven feet high; their *ſtalks* quadrangular, without ſpines; *leaflets* from forty to fifty or ſixty pair, two-ranked, three or four inches long and one broad, coriaceous; ſtriated beneath; clothed on both ſides, as well as the leafy part of their common ſtalk, with a cobweb-like down, eaſily rubbed off; the lower ones only ſomewhat pointed. This ſpecies has not flowered in Europe; but the male *catkin*, brought from Africa, and repreſented in Jacquin's magnificent plate, is elliptic-oblong, near two feet in length, and five inches in diameter, brown, ſmooth, compoſed of innumerable wedge-ſhaped *ſcales*, covered underneath with *anthers*, and each tipped with a quadrangular, or pyramidal, abrupt, prominent point, without any of the ſpinous termination ſeen in the laſt.

13. Z. *lanuginoſa*. Woolly-ſcaled Zamia. Jacq. Fragm. 28. t. 30, 31. Willd. n. 13. Poiret n. 9. —Leaflets lanceolate, ſmooth, ſpinous-pointed, with a few unilateral ſpinous teeth. Radical ſcales woolly.—Native of ſouthern Africa, from whence a ſingle plant was brought long ago to the Imperial ſtove at Schoenbrun. After twelve years' culture, it had made but ſlow progreſs, and ſhewed no ſigns of fructification. The *root* conſiſts of numerous, very thick, tap-ſhaped radicles; its crown being as large as a man's head, and covered with imbricated, deltoid, pointed ſcales, two or three inches broad, all clothed with ſoft, denſe, hoary wool. *Leaves* a yard high, or more, dark green, very ſmooth and ſhining, with unarmed quadrangular *ſtalks*, and from twenty-five to thirty pair of linear-lanceolate *leaflets*, each four inches long, with a ſhort ſpinous point; their margins all entire, except being often furniſhed with one, two, or three broad, ſpinous, tooth-like lobes, always at the lower edge of each leaflet, by which this ſpecies is at firſt ſight readily diſtinguiſhed. Profeſſor Willdenow ſuſpected it might not be diſtinct from Z. *cycadis* (ſee our 15th ſpecies); but we ſee no reaſon to concur in that opinion.

14. Z. *horrida*. Grey Thorny Zamia. Jacq. Fragm. 27. t. 27, 28. Willd. n. 14. Ait. n. 6. Poiret n. 8.—Leaflets lanceolate, glaucous, acute, ſpinous-pointed, with a few unilateral, lanceolate, ſpinous teeth. Radical ſcales ſmooth. —Native of ſouthern Africa, a hundred miles above the Cape of Good Hope. Cultivated at Schoenbrun, and introduced into the Engliſh green-houſes, in 1800, by John Liptrap, eſq., who poſſeſſed, for ſeveral years, a ſplendid collection of exotics at Mile-end; but it does not ſeem to have bloſſomed either here or in Germany. The ſcaly crown of the *root* is as large as the preceding, but the ſcales are not woolly. The *leaves* and their ſtalks are all over finely glaucous, which diſtinguiſhes the plant from the reſt of its genus. The *leaflets*, as well as their lateral ſpinous lobes, are longer, and more pointed, than in Z. *lanuginoſa*; the points and baſes green, as the whole ſurface becomes when rubbed. A ripe female *cone*, brought from its native country, is fifteen inches long and eight thick, brown, teſſellated, and warty, but not ſpinous. *Drupas* orange-coloured, oval, each with a thick, elongated, obtuſe point, in the place of the *ſtyle*. *Nut* oval, ſomewhat triangular. This ſpecies is, as Willdenow obſerves, very nearly related, in ſize and general habit, to the laſt, but differs in its ſmooth crown of the *root*, and glaucous colour of the *herbage*.

15. Z. *cycadis*. Bread-tree Zamia. Linn. Suppl. 443. Ait. n. 7. Poiret n. 4. (Cycas caffra; Thunb. Nov. Act. Upſal. v. 2. 284. t. 5.)—Leaflets lanceolate, ſpinous-pointed, ſmooth, entire; tapering at the baſe. Scales of the catkins abrupt, obtuſe, pointleſs.—Native of the north-eaſt part of ſouthern Africa, far above the Cape of Good Hope, from whence living plants were ſent to Kew, by Mr. Maſſon, in 1775. This is the ſpecies figured by Gærtner. It grows on the ſides of hills, in dry open ſpots, eſpecially where the ground has been cleared by burning, and flowers in Auguſt, or the following months. The crown of the *root* is round and large, imbricated with ſcales, and, according to Linnæus,

Linnæus, downy; with age, the plant acquires, like the palm tribe, a thick ſcaly *ſtem*, as tall as a man. The *leaves* are from a ſpan to two feet long, of rather numerous and crowded *leaflets*, each two or two and a half inches in length, and one-quarter or one-third of an inch in breadth; ſmooth and even above; ſtriated beneath; the younger ones, or rather thoſe of young plants, tipped with a ſharp tooth or two, beſides the terminal ſpine. *Common ſtalks* ſmooth. *Catkins* ſtalked, ovate: the *male* a ſpan long; its *ſcales* ſomewhat triangular, very obtuſe, rugged, ſmooth; flat on the upper ſide; keeled underneath, and covered with *anthers* the ſize of millet-ſeed: *female catkin* larger than the male, near a foot long, green and ſmooth; its *ſcales* ſtalked, with a quadrangular, peltate, thick termination, lodging a pair of ovate angular *drupas*, with a red pulp. *Nut* of each the ſize of an acorn, not very hard, with a white ſolid kernel. Thunberg ſays, the older plants, which have acquired a *ſtem*, are broken off, or cut down, by the Caffres and Hottentots; and the pith, which is of conſiderable thickneſs, being tied up in the ſkin of a ſheep or calf, previouſly well rubbed with greaſe, is buried in the ground. After remaining there a month, or longer, it is taken up in a putrefying ſtate, and being bruiſed between two ſtones, and moiſtened with water, forms a ſort of paſte, which is made into little round cakes, about an inch in thickneſs. Theſe are baked in wood-aſhes, and are eſteemed a great luxury; though, as the author obſerves, not very tempting to people of more refined habits, eſpecially if they happen to have witneſſed the whole proceſs of preparation.

We are not without a ſuſpicion that Willdenow's *Z. tridentata* (ſee n. 3.) may be this very ſpecies. This is more probable, at leaſt, than his own conjecture, of Jacquin's *lanuginoſa*, n. 13, being *Z. cycadis*.

Authors, even the moſt intelligent, uſe the term *frond*, inſtead of *leaf*, in their deſcriptions of this genus, becauſe Linnæus conſidered *Zamia* as either a Palm, or a Fern. But its fructification is by no means cryptogamic, or obſcure; nor do the leaves bear the flowers of either ſex. There is a curious coincidence of ſtructure and appearance between its *anthers*, and the ſuppoſed *capſules* of ſome of the ſpiked or racemoſe *Filices*, eſpecially of *Botrychium* (the *Oſmunda lunaria*, &c. of Linnæus); indeed the likeneſs is ſo great, that we can ſcarcely perſuade ourſelves that the two parts in queſtion are not deſtined to anſwer the ſame purpoſe.

Zamia, in *Gardening*, compriſes ſome low plants of the tender palm kind, among which the ſpecies chiefly cultivated in this climate are, the dwarf pinnated palm (Z. pumila), the thorny dwarf palm (Z. ſpinoſa), and the entire leaved palm (Z. integrifolia).

The firſt is the fineſt ſort, but the other two are occaſionally preſerved in ſome ſtove collections among other plants of the ſame claſs.

Method of Culture.—They may be raiſed from ſeeds, and by other means, in pots plunged in the bark-beds of hot-houſes and ſtoves, where they muſt conſtantly be kept in light rich earth or mould, having the management of other exotics of ſimilar kinds.

They afford variety in all ſuch collections of tender plants.

ZAMIANSK, in *Geography*, a fort of Ruſſia, on the Volga; 20 miles N.W. of Aſtrachan.

ZAMIN, a town of Grand Bucharia; 50 miles N.E. of Samarcand.—Alſo, a river of Aſia, which riſes about 70 miles S. of Kogend, and after a N.W. courſe of about 150 miles, loſes itſelf in the earth.

ZAMIRÆ, in *Ancient Geography*, a people of India that were Anthropophagi, near mount Mœcander. Ptol.

ZAMOLXIS, in *Biography*, a celebrated perſon among the Scythians, was, as ſome have ſuppoſed, a ſlave of Pythagoras, who, having attended him into Egypt, obtained his freedom, and taught his maſter's doctrine among the Getæ. It has been alſo ſaid, that in order to enforce the belief of the immortality of the ſoul, he dug a ſubterraneous apartment, and concealed himſelf in it for three years; but re-appearing as one riſen from the dead, he there eſtabliſhed his authority as a teacher. But Herodotus, who relates this fabulous ſtory, as a common tradition, gives it no credit, but expreſsly ſays, that ſo far from being a Pythagorean, he flouriſhed at a much earlier period than Pythagoras. The general teſtimony of the ancients furniſhes reaſon for concluding, that Zamolxis was a Thracian, who, at a very remote period, taught the Scythians the doctrine of the immortality of the ſoul, and that after his death, they enrolled his name among the divinities, with whom they aſſured themſelves they ſhould aſſociate in the inviſible world. Herodotus relates, that at certain feſtivals, they choſe ſeveral perſons by lot, who were to be deputed as meſſengers to Zamolxis; and that they put them to death, by throwing them up into the air, and catching them, as they fell, upon the points of their ſpears; and this ſtory is thought to be the more credible, becauſe it is well known, that the practice of offering human ſacrifices prevailed among the Scythians and the Thracians. Herodotus. Brucker by Enfield, vol. i.

ZAMORA, in *Geography*, a town of Spain, in the province of Leon, on the Duero; the ſee of a biſhop, ſuffragan of Compoſtella. In the year 967, this town was taken by the Moors and deſtroyed; but afterwards rebuilt and fortified. It is now a frontier town againſt Portugal, and place of arms. The ſtreets are narrow, and the general appearance of the town is gloomy; 120 miles N.W. of Madrid. N. lat. 41° 50′. W. long. 6°.—Alſo, a town of Algiers, founded in honour of a Mahometan ſaint. Here is a ſmall garriſon; 28 miles W. of Seteef.—Alſo, a town of Mexico, in the province of Guadalajara; 80 miles N.W. of Mechoacan. N. lat. 20° 54′. W. long. 103° 40′.—Alſo, a town of South America, in the audience of Quito, on a river of the Amazons. In the neighbourhood are ſome gold-mines; 200 miles S. of Quito. S. lat. 4°. W. long. 78° 46′.

ZAMOSCIE, or Samostzic, a town and fortreſs of Auſtrian Poland, in Galicia, built by the famous great chancellor, John Zamoyſki. It has a ſtately cathedral, and ſeveral other churches, a decayed univerſity, a charitable foundation called Mons Pietatis, and ſeveral valuable privileges; but the fortifications are now in a bad condition. The proprietor of this town, &c. ſtiled himſelf prince Zamoſcic. It now belongs to Auſtria; 60 miles N.W. of Lemberg. N. lat. 50° 31′. E. long. 23° 15′.

ZAMPALA, a river of Mexico, which riſes in the province of Tlaſcala, and runs into the gulf of Mexico, N. lat. 19° 40′.

Zampala, *Chempoalla*, or *Zempoala*, a city of Mexico. When Cortez landed in the year 1519, the chief or lord of this place, who was tributary to Montezuma, offered his ſervice to the Spaniards. It was at that time a large city and exceedingly populous, the loweſt account reckoning the inhabitants at 20,000 or 30,000. It was the capital of a country called Totonacapan, now the N.E. part of the province of Tlaſcala; 90 miles E. of Puebla de los Angelos. N. lat. 20° 10′. W. long. 97° 50′.

ZAMPERINI, Anna, in *Biography*, of Venice, arrived in England in 1767, as a buffa ſinger, a *parte eguale*, with the

the Guadagni, fifter to the great finger and actor Guadagni, who had been here in early youth.

The Zamperini was a very pretty woman, coquetifh, and an affected finger. Her firft appearance on our ftage was in La buona figliaola Maritata of Piccini, of which the mufic was fo difficult to perform, and not eafy to hear, that it was never fufficiently repeated for the public to be familiarly acquainted with it. They were glad, therefore, as well as the performers, to return to La buona figliaola, for their own relief from a too ferious attention.

The fifter of Guadagni, an elegant finger, and graceful actrefs, the original performer of the part of Cocchina in Italy, being fuperfeded in that part by the Zamperini, occafioned a great rupture between Guadagni juft arrived here in 1769 for the fecond time, and the honourable patentee and imprifario of the opera ; which generated faction and a party fpirit that deftroyed the comfort of the opera, ferious and comic, at a time when the public, in a ftate of tranquillity, would have been more delighted than at any other period.

We never heard the Zamperini fing ferious mufic, but are told by M. Laborde (Effai fur la Muf.), that "having a natural talent for mufic, and great fpirit and fire in her action, though her excellence of performance was principally manifefted in comic operas, yet fhe fung equally well in the ferious. After performing with great applaufe in London, Lifbon, and Italy, fhe quitted the ftage, and was well married."

ZAMPIERI, Domenico, called *Domenichino* in the Hiftory of Painting, was born at Bologna, in 1581, and placed when very young under the tuition of Denis Calvert ; but being ill treated by him, he prevailed upon his father to permit him to enter the fchool of the Carracci, at the time when Guido and Albano were both ftudents there. He foon diftinguifhed himfelf, but more by his care and affiduity than by brilliancy of talent. He here attached himfelf to Albano, and, when he left the Carracci, they travelled together to Parma, Modena, and Reggio, to ftudy the works of Corregio and Parmeggiano, and foon afterwards they both went to Rome. In that city his firft patron was cardinal Agucchi, who employed him in his palace, and commiffioned him to paint three pictures for the church of S. Onofria, of fubjects from the life of S. Jerome. His former mafter, An. Carracci, alfo employed him for fome time to affift in his great work at the Farnefe gallery ; and he painted from his own defigns, in the loggia in the garden, the Death of Adonis, when Venus fprings from her car to affift her unfortunate lover.

As the health of A. Carracci became rapidly impaired, and he was neceffitated to refufe many commiffions offered to him, he recommended them to his fcholars ; and had the fatisfaction of feeing Guido and Domenichino employed by the cardinal Borghes to paint the frefcoes in S. Gregorio, which have fubfequently become fo celebrated, and of which the Flagellation of S. Andrea by the latter is fo juftly admired. The cardinal Farnefe alfo employed him to paint fome frefcoes in the chapel of the abbey at Grotto Ferrata ; among them is that picture of the Cure of the Demoniac Youth, which has been compared with and by many preferred to the one of Raphael in the Transfiguration. Another cardinal, Aldrobrandini, availed himfelf of the eftablifhed renown of Domenichino, and engaged him to paint in frefco ten pictures of the hiftory of Apollo, in his villa at Frafcati, which added greatly to his reputation. Soon afterwards he completed the work which more than any other has ferved to immortalize his name, his well-known picture of the Communion of S. Jerome, painted for the principal altar of the church of S. Girolamo della Carità. This fine production ranks with the beft of any age. It is faid with great femblance of truth, that the arrangement of its compofition was borrowed of Agoftino Carracci, who painted the fame fubject for the Certofi at Bologna. But if Domenichino did borrow the thought, he has amply made amends by the mode in which he has adorned it. It received its due meed of applaufe at the time, and was ranked as the work next in value to the Transfiguration by Raphael ; but while the merit of its author thus excited the admiration of the public and moft of the artifts of Rome, it elicited in the minds of feveral, and among them of Lanfranco, the bitterift fpirit of envy and malignity, which was actively exerted againft him. He was reviled as a plagiarift, and the execution of his pictures condemned as heavy and ungraceful ; and in fpite of their powerful effect, the influence of his adverfaries fo far prevailed, that for a time he failed of commiffions, and had ferious thoughts of changing his profeffion for that of fculpture. The celerity and freedom with which Lanfranco invented and painted, and all thofe machinifts who applauded the means of art above the end, were oppofed to the flow and uncertain power of invention poffeffed by Domenichino. But upon this fubject Lanzi juftly obferves, that if Domenichino had had the good fortune which he merited, he would, like the Carracci in Bologna, have foon triumphed over his adverfaries, admitting that he was an imitator, but not a fervile one, and that if his works were more flow in their birth than thofe of his enemies, they merited a much longer exiftence. "The public," he adds, "is juft in its judgment, but before its tribunal a good caufe is not fufficient of itfelf unlefs able pleaders give it credit. Domenichino timid and folitary, mafter of little, had not then fufficient means to protect himfelf againft the torrent which overwhelmed him, and report feemed to verify the remark of the cardinal Agrecchi, that his worth would not be duly appreciated till after his death. Impartial pofterity does him juftice, and there is now no gallery which is regarded as complete without fome fpecimen of his talents."

The virulence of thefe perfecutions difgufted and difturbed Domenichino fo much, that he returned to Bologna, and there he tranquilly paffed fome years in the delightful practice of his art. Among the moft renowned of his productions about this period are his pictures of the Martyrdom of S. Agnes, for the church of that faint, and the Madonna della Rofario, both large works, and of fufficient merit to attract the infipidity of the French, and for a while they adorned the walls of the Louvre ; but they are now returned to their original deftinations. When malice and envy had exhaufted themfelves, and fame added frefh laurels to the brow of Domenichino, he was invited back to Rome by pope Gregory XV., who appointed him his principal painter, and architect to the pontifical palace. The cardinal Montotto engaged him to paint the vault of S. Andrea della Valle, where he reprefented the four Evangelifts with Angels ; and in the chapel of cardinal Bandini, in the church of S. Sylveftro, in the Quirinal, he painted four pictures, which rank amongft his beft : the fubjects are, Efther before Ahafuerus, Judith with the Head of Holofernes, David playing and finging before the Ark, and Solomon and his Mother Bathfheba feated on a Throne. The former are certainly of a very high clafs of art, and though lacking the fimplicity and grandeur of M. Angelo or Raffaelle, yet they are full of rich and fine forms, particularly thofe of the angels, &c. which accompany the figures. The latter are not of fo elevated a ftyle, but are more familiar, and wrought with fine colour : they are engraved by Jacomo Frey.

Frey. About the fame time he painted four of the Cardinal Virtues in the angles of S. Carlo Catenari, which have been preferved to us by the graver of G. Andran.

Domenichino not only excelled in hiftorical painting, in works both great and fmall, but he has alfo left us many landfcapes of extraordinary excellence in point of tone; feldom can fo much be faid of their compofitions. They are generally felect in fcenery, of a grave and dignified character, and are executed with boldnefs and freedom, and enriched with figures. A very fine one may be feen in the collection of the marquis of Stafford. He is univerfally efteemed as the beft among the difciples of the Carracci, and Nicolo Pouffin is faid to have preferred him before them: but that favour, if we except the Communion of S. Jerome, his works will fcarcely be found to fupport. M. Fufeli has remarked, that "expreffion which had languifhed after the death of Raphael feemed to revive in Domenichino; but his fenfibility was not fupported by equal comprehenfion, elevation of mind, or dignity of motive." His forms are by no means fo pure or graceful, or his actions fo natural and unconftrained, as thofe of that divine painter. His invention does not appear to have been vivid, but his ftudy was unremitting, and with all his defects he well deferved the title of a great painter, and certainly has not fince been equalled. He died in 1641, aged 60.

ZAMPOGNA, in the *Italian Mufic*, is ufed to denote any inftrument that founds like a flute; and particularly a bagpipe, being an affemblage of divers pipes of different fizes. It is alfo taken for a common flute.

ZAMRECOTTA, in *Geography*, a town of Bootan; 34 miles S.E. of Damfong.

ZAMZEVRIZI, a town of the principality of Georgia, in the province of Carduel; 15 miles S.W. of Gori.

ZANA, a river of Peru, which runs into the Pacific ocean, S. lat. 7°.

ZANAATHA, in *Ancient Geography*, a town in the interior of Arabia Petræa. Ptol.

ZANCHI, Basilio, in *Biography*, an elegant Latin poet, was born at Bergamo in 1501, and purfued his ftudies under Giovita Rapicio with fo much ardour, that at the age of feventeen he made a collection of Latin poetical epithets, which was afterwards publifhed. Before he had attained the age of twenty he vifited Rome, and was much noticed by the poets of that city. According to the practice which then prevailed he changed his baptifmal name Pietro into L. Petreius; but afterwards, returning to Bergamo, and entering, in 1524, among the canons-regular of Lateran, he affumed that of Bafil; devoting his attention to facred literature, and publifhing fome works on the fcriptures. In the progrefs of his life he frequently changed his refidence; and was every where refpected, on account of his learning and talents, by the principal fcholars of the age. Under the fevere decree of pope Paul IV. iffued in 1558, which commanded, under the threatened penalty of the prifon or galleys, all the religious to return to the cloifters to which they belonged, Zanchi was imprifoned, and fell a facrifice to the rigour of confinement. One of his biographers fays, that he had few equals in the fweetnefs, and fewer in the elegance of his poetry; fpecimens of which occur in his eight books of poems, one of which bears the title of "De Horto Sophiæ," and defcribes the moft remarkable facts and doctrines of the Catholic religion. Some of his poems are inferted in the "Deliciæ," and the "Carmina Poetarum Italorum." He alfo publifhed a kind of Lexicon, entitled "Latinorum Verborum ex variis auctoribus Epitome." Moreri. Gen. Biog.

Zanchi, Girolamo, an Italian Proteftant, was born in 1516 at Alzano, in the territory of Bergamo, and entered among the canons-regular of Lateran at the age of fifteen, in which connection he remained for ten years. But Peter Martyr having communicated to him, and others of his fraternity, the opinions of the reformers, he departed with him from Italy in 1530, and went to Geneva. From Geneva he removed to Strafburg upon an invitation to fupply a vacancy in the profefforfhip of facred literature, which he accepted in 1553, and which he occupied for about eleven years. Having figned the Augfburg confeffion, with fome reftrictions, he was aggregated to the chapter of St. Thomas, in Strafburg. Although his difpofition was moderate and conciliatory, he was engaged in fome difputes with the zealous Lutherans, who determined to procure his expulfion. With this view, they acquired his fignature of a formulary, to which he affented in the following terms: "Hanc doctrinæ formulam ut piam agnofco, ita etiam recipio." The ambiguity of this declaration was not fatisfactory to his adverfaries, and he was therefore induced to refign, and to accept an invitation to a church in Chiavenna. The articles with regard to which he was fufpected by the Lutherans were predeftination, the perfeverance of the faints, the euchariſt, ubiquity, images, antichrift, and the end of the world. Having refided at Chiavenna from the year 1563 to 1568, he removed to the theological chair at Heidelberg, when he took the degree of doctor. When Frederick III., who was a zealous Lutheran, fucceeded the elector palatine, and removed the Heidelberg profeffors, Zanchi declining offered fettlements at Leyden and Antwerp, took a place in count John Cafimir's college at Newftadt. Upon the reftoration of the expelled profeffors, Zanchi, on account of his age, was declared "emeritus;" and having loft his fight, died at Heidelberg in 1590.

Highly efteemed among Proteftants in general on account of his learning and invincible attachment to their principles, John Sturmius affirmed of him, "that he fhould not be at all anxious for the caufe of reformed religion, if Zanchius alone were to difpute in the council of Trent againft all the fathers prefent." Bayle.

ZANCLE, in *Ancient Geography*, a town of Sicily, on the ftrait which feparates this ifland from Italy. According to Herodotus, the Meffenians, driven from the Peloponnefus by the Lacedæmonians, tranfplanted themfelves into Sicily, took poffeffion of Zancle, and gave it the name of Meffana, whence Meffina.

ZANDENDORF, in *Geography*, a town of Germany, in the margravate of Anfpach; 2 miles S.W. of Cadolzburg.

ZANDHOP, a town of Pruffia, in Ermeland; 16 miles S.E. of Heilfberg.

ZANE, a town of Virginia; 9 miles S.S.E. of Winchefter.—Alfo, a townfhip of Champaign county, in the diftrict of Ohio, with 645 inhabitants.

ZANES, in *Ancient Geography*, a town of Upper Mœfia, fortified by Juftinian, fo as to render it one of the ftrongeft bulwarks of the empire.

ZANESVILLE, in *Geography*, a townfhip of the ftate of Ohio, in the county of Mufkingum, on the Scioto, with 2154 inhabitants.

ZANETTI, Antonio, in *Biography*, of Venice, maeftro di capella to the duke of Modena, the latter end of the 17th and beginning of the 18th century, for whom, and for the theatres in Venice, he produced fix or feven operas that were much efteemed in thofe days.

Zanetti, Francisco, was born in the year 1740, maeftro di capella in the cathedral at Perugia in 1770. He had previoufly paffed fome time in London, where fome elegant and eafy fonatas of his compofition were publifhed by by Bremner. He loſt his place in the church at Perugia, by having appeared on the Alberti ſtage at Rome, as a ſinger in an opera of his own compoſition, and that, merely to ſupply the place of the principal tenor, who had run away, and to prevent the piece from being ſtopped: he however married afterwards a pretty woman, who ſung well, and indemnified him for the loſs of his place.

Since his marriage he has compoſed ſeveral ſucceſsful operas, in which ſignora Zanetti has performed the principal female part, particularly one at Milan in 1785, in which ſhe was much applauded, as well as her huſband's muſic. He has compoſed much natural and pleaſing muſic for inſtruments; as ſix violin trios, ſix quintets for three violins, and two violoncellos, &c.

ZANFARA, in *Geography*. See ZAMFARA.

ZANGARISA, a town of Naples, in Calabria Ultra; 6 miles N.E. of St. Severina.

ZANGESAIR, or SANGUSEER, a ſea-port of Hindooſtan, in Concan, with a good harbour, but not much frequented; 15 miles S. of Severndroog. N. lat. 17° 38′. E. long. 72° 54′.

ZANGUEBAR, a name given to a large territory of Africa, bordering on the Eaſtern ſea, including many kingdoms; the name is ſaid to import "the coaſt of the negroes," all the inhabitants being blacks, with curled woolly hair; extending from two degrees north to the twenty-firſt degree of ſouth latitude. The principal kingdoms on the coaſt have been ſeparately ſpoken of and deſcribed. Of the country in general little is known; the whole tract is repreſented as barren and unhealthy, the lands lying low, and interſected with rivers, lakes, thick woods, foreſts, and marſhy grounds. The fruits of it are very unwholeſome, their rivers, for the moſt part, covered or choked up with weeds, buſhes, and thickets; all which ſo ſtagnate the air, and corrupt the products of the earth, and render the inhabitants ſo ſickly and indolent, that they receive little or no benefit from its produce. The Bedouin Arabs are the only people who make advantage of it by breeding multitudes of cattle, and living moſtly upon their fleſh and milk; whilſt the negroes, or Zanges, content themſelves with feeding upon wild beaſts and fowl, which ſwarm all over thoſe parts. To ſupply the want of corn, pulſe, roots, and other wholeſome food, of which they are deſtitute, the Divine Providence hath interſperſed that whole country with mines of gold, eaſily got, by the help of which they can purchaſe all the neceſſaries and conveniences of life from other parts: but this is the very circumſtance that makes them ſo extremely jealous of letting ſtrangers penetrate into the inland; more eſpecially ſince the Portugueſe have made themſelves maſters of ſuch a number of places along this coaſt. They are in their nature fierce and ſtout, ignorant and brutiſh, without religion, eſpecially the negroes; upon which laſt account they have the name of Caffers. As for the Bedouins, they have ſome kind of religion, or rather obſerve a variety of ſuperſtitious rites, but are no leſs ignorant and uncivilized than the Caffers; yet they chiefly herd among themſelves, and live at a great diſtance from the coaſts, and by the ſides of lakes and rivers, for the convenience of paſture for their numerous herds. They go all naked, both Caffers and Arabs, excepting that they wrap a piece of cotton cloth round their middle, which deſcends a little below the knee; but thoſe who live along the coaſts are ſomewhat more civilized, affect a little more finery in their dreſs, and inſtead of cotton cloth cover themſelves with the ſkins of wild beaſts, more or leſs rich, according to their rank, with the tails of animals trailing behind on the ground; they likewiſe adorn their necks, arms, and legs, with a variety of beads, bugles, and other trinkets, of amber, jett, glaſs, and other materials, which they purchaſe from the merchants with their gold, furs, ivory, and other commodities. There are among theſe coaſters a great number of Mahometans, but a much greater number ſtill among the iſlanders along the coaſt; they being for the moſt part deſcended from thoſe Arabs who were baniſhed out of their country. The countries are, Melinda, Mongala, Jubo, Moſambique, and ſome others.

ZANHAGA, or ZANZAGA, or *Zenhaga*, a province of Africa, in the country of Sahara, bordering on the Atlantic.

ZANIA, in *Ancient Geography*, a town of Aſia, in the interior of Media. Ptol.

ZANNA, the name of a medicinal earth, deſcribed by Oribaſius: he ſays it is found in Armenia, in that part which borders on Cappadocia; and that it is very drying, and of a pale colour, and eaſily diſunited by water, falling into a fine powder like lime.

It is called by the natives *zarina*, and the mountain from which it is taken is near the city Baganona. It is of a drying and aſtringent nature.

ZANNICHELLI, JOHN JEROME, in *Biography*, a phyſician and naturaliſt, was born at Modena in 1662, and ſettling in the medical department at Venice, he publiſhed a work on the preparation of chemical medicines, entitled "Promptuarium Remediorum chymicorum." In 1702 he was created, by a patent of the duke of Parma, doctor of medicine, ſurgery, and chemiſtry. He afterwards formed a muſeum of natural hiſtory, and made many journies in order to collect foſſils and other ſubjects for this repoſitory. Some of his excurſions were undertaken by public authority, as he was nominated by the chamber of health, phyſician-naturaliſt to all the ſtates of Venice. He died in 1729. During his life-time he publiſhed ſeveral tracts relating to botany and lithology; and after his death his ſon John James edited from his MSS. "Opuſcula Botanica Poſthuma," 1730, and "Iſtoria della Piante che naſcono nel lidi intorno à Venizia," 1735, being a deſcription, with figures, of the plants on the Venetian ſhores. Haller. Eloy.

ZANNICHELLIA, in *Botany*, was ſo named by Micheli, in compliment to John Jerome Zannichelli, an eminent apothecary at Venice, who ſpared no expence or labour, even at an advanced age, in the ſtudy of botany, on account of which he undertook ſeveral hazardous and difficult journies. He was particularly devoted to the obſervation of marine productions, as well animal as vegetable. In purſuit of theſe he was Micheli's companion and guide, among the iſlands and ſhores of the Adriatic; and has wrote an account of the plants there to be found; which, with the hiſtory of ſome of his mountain tours, were printed after his deceaſe. Zannichelli publiſhed a pamphlet on the medical qualities of *Ruſcus*, as well as various chemical and geological works. He died in 1729, aged 67. His ſon, John Jacob Zannichelli, wrote on the properties of the horſe-cheſnut, as well as an account of his own and his father's muſeum. — Mich. Nov. Gen. 70. t. 34. Linn. Gen. 476. Schreb. 616. Willd. Sp. Pl. v. 4. 181. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 229. Sm. Fl. Brit. 955. Prodr. Fl. Græc. Sibth. v. 2. 225. Purſh 4. Juſſ. 19. Poiret in Lamarck Dict. v. 8. 836. Lamarck Illuſtr. t. 741. Gærtn. t. 19. (Graminifolia; Dill. Gen. 168.)—Claſs and order, *Monoecia Monandria*. Nat. Ord. *Inundatæ*, Linn. *Naiades*, Juſſ.

Gen.

Gen. Ch. Male, *Cal.* none. *Cor.* none. *Stam.* Filament one, ſimple, elongated, erect; anther ovate-oblong, erect.

Female, cloſe to the male. *Cal.* Perianth of one leaf, inferior, hollow, ſwelling, oblique, with two or three teeth. *Cor.* none. *Piſt.* Germens from four to eight, ſtalked, oblong, converging; ſtyles as many, ſimple, rather ſpreading; ſtigmas ovate, peltate, flat, ſpreading outwards. *Peric.* none. *Seeds* as many as the germens, naked, ſtalked, oblong, compreſſed, a little incurved, beaked with the permanent ſtyles, tuberculated at the back, with a ſimple coriaceous coat.

Obſ. Schreber ſpeaks of ſome ſolitary, diſperſed, male flowers, furniſhed with a ſingle-leaved calyx, whoſe orifice is oblique, acute at the poſterior part, and entire. He follows Gærtner in conſidering the coat of each ſeed as a capſule; but the latter allows there is ſcarcely any internal coat, or integument, to the kernel, and the outer one is deſtitute of valves; ſo that although the ſtyle be permanent, we rather follow Linnæus than other authors; and we conceive that if the exiſtence of a naked ſeed be admitted in any inſtance, it muſt be in the preſent; there being only a ſimple covering to the embryo, which is indiſpenſable.

Eſſ. Ch. Male, Calyx none. Corolla none. Filament elongated, erect. Anther oblong.

Female, Calyx of one leaf. Corolla none. Germens four, or more. Stigmas peltate. Seeds ſtalked, naked.

1. Z. *paluſtris.* Marſh Horned-Pondweed. Linn. Sp. Pl. 1375. Willd. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 1844. Purſh n. 1. Mill. Illuſtr. t. 77. Fl. Dan. t. 67. (Z. paluſtris major, foliis gramineis acutis, flore cum apice quadricapſulari, embryonis clypeolis integris, et vaſculo non barbato, capſulis ſeminum ad coſtam dentatis; Mich. n. 1. t. 34. f. 1. Potamogeito ſimilis, graminifolia, ramoſa, ad genicula polyceratos; Pluk. Phyt. t. 102. f. 7.)—Anther of four cells. Stigmas entire.—Native of ponds, ditches, and rivulets, in Italy, as well as other parts of Europe, from Sweden to Conſtantinople, flowering in ſummer. It is found alſo in Virginia, near the ſweet ſprings, according to Clayton and Purſh. The *root* is annual. *Stem* ſlender, floating, branched, round, leafy, and ſmooth, with the habit of a *Potamogeton*. *Leaves* linear, graſſy, ſeſſile, narrow, acute, and entire, two or three inches long. *Bractea* membranous, tubular, axillary, including a pair of green *flowers*, one male, the other female. *Anther* tawny. *Seeds* blackiſh when ripe, rugged or toothed at the back.

2. Z. *dentata.* Toothed Horned-Pondweed. Willd. n. 2. Poiret n. 2. (Z. paluſtris minor, foliis gramineis acutiſſimis, flore minimo cum apice bicapſulari, embryonis clypeolis circumcrenatis, et vaſculo barbato, capſulis ſeminum ad coſtam aſperis; Mich. n. 2. t. 34. f. 2.)—Anther of two cells. Stigmas toothed.—Found in the neighbourhood of Florence, with the foregoing, as well as in mountain pools in the adjacent country. Rather ſmaller than the firſt ſpecies, with ſhorter *leaves;* but moſt eſſentially different in having only two cells to the *anther*, and remarkably toothed *ſtigmas*. The *ſeeds* alſo are tuberculated all over, not merely toothed at the back, or keel.

Loureiro has a *Z. tuberoſa*, Fl. Cochinch. 543, to which he attributes "ovate-oblong ſingle-ſeeded *berries*." It grows in the waters of Cochinchina, and has tuberous perennial *roots*, radical, ſword-ſhaped *leaves*, ſpiked *flowers*, the *calyx* of the female in ſix deep ſegments. We agree with M. Poiret that it would be too hazardous to admit this ſpecies without examination. Loureiro had probably never ſeen a real *Zannichellia*.

ZANOE, in *Ancient Geography*, a town of Paleſtine, in the mountains of the tribe of Judea.—Alſo, a town of Paleſtine, in the plain of the tribe of Judea. Joſhua.

ZANONA, in *Geography*, a ſmall iſland in the Mediterranean; 2 miles N.E. of Ponza.

ZANONIA, in *Botany*, bears that name in memory of an Italian botanical writer of the 17th century, James Zanoni, ſuperintendant of the public garden at Bologna. He publiſhed in 1675 a folio volume, in Italian, entitled *Iſtoria Botanica*, with 80 plates, of new or rare plants, accompanied by deſcriptions. Monti gave an enlarged edition of this work, in Latin, in 1742. Zanoni died in 1682, aged 67. Plumier, who ſpeaks of him as a learned and critical inveſtigator of the plants of the ancients, publiſhed a *Zanonia*, in his Nov. Gen. 38. t. 38, which Linnæus has reduced to COMMELINA (ſee that article, ſp. 12.); and which ſome botaniſts reckon a *Tradeſcantia*.—Linn. Gen. 523. Schreb. 690. Willd. Sp. Pl. v. 4. 769. Mart. Mill. Dict. v. 4. Juſſ. 397. Poiret in Lamarck Dict. v. 8. 837. Lamarck Illuſtr. t. 816.—Claſs and order, *Dioecia Pentandria*. Nat. Ord. *Cucurbitaceæ*, Linn. Juſſ.

Gen. Ch. Male, *Cal.* Perianth of three ovate ſpreading leaves, ſhorter than the corolla. *Cor.* of one petal, in five deep, ſpreading, pointed, inflexed, equal ſegments. *Stam.* Filaments five, ſpreading, the length of the calyx; anthers ſimple.

Female, on a ſeparate plant, *Cal.* Perianth as in the male; ſeated on the germen, deciduous. *Cor.* as in the male. *Piſt.* Germen oblong-clubſhaped, inferior; ſtyles three, ſpreading, conical, reflexed, permanent; ſtigmas divided, criſped. *Peric.* Berry large, elongated, abrupt; tapering at the baſe; encompaſſed near the top with a criſped future, of three cells. *Seeds* two in each cell, rounded-oblong, flat, in the centre of a lanceolate ſcale, or wing.

Eſſ. Ch. Male, Calyx of three leaves. Corolla in five deep ſegments.

Female, Calyx ſuperior, of three leaves. Corolla in five deep ſegments. Styles three. Berry of three cells, with a lid. Seeds winged, two in each cell.

1. Z. *indica.* Climbing Indian Cucumber. Linn. Sp. Pl. 1457. Willd. n. 1. Poiret n. 1. ("Penar-valli; Rheede Hort. Mal. v. 8. t. 49, male; t. 47, 48, female.")—Native of Malabar and Ceylon. A ſtranger in the gardens of Europe, nor do we recollect having ever ſeen a ſpecimen, Linnæus having, in this inſtance, confided entirely in the *Hortus Malabaricus*, which was very rarely his cuſtom. The herbaceous branching *ſtem* appears to climb by means of ſimple, ſpiral, axillary *tendrils*. *Leaves* alternate, ſtalked, ovate-oblong, acute, entire, ſmooth. *Flowers* in lax drooping *cluſters*, which in the male appear to be ſomewhat compound. *Fruit* oblong, abrupt, obſcurely triangular, with the flavour of a cucumber according to Rheede. There can be little doubt of this genus belonging to the gourd tribe, whether it anſwers to all the characters which authors have been pleaſed to apply to that tribe or not. The opening of the *fruit* betrays ſome analogy to *Momordica operculata*.

ZANORI, in *Geography*, a town of Mexico, in the province of Culiacan; 80 miles N. of Culiacan. N. lat. 25° 40′. W. long. 108° 10′.

ZANOTTI, FRANCIS MARIA, in *Biography*, a mathematician and philoſopher, was born at Bologna in 1692, began his education among the Jeſuits, and purſued a courſe of natural philoſophy at the place of his nativity. Declining the proſecution of juriſprudence, to which he directed his firſt attention, he devoted himſelf to the ſtudy of philoſophy, laying the foundation in an acquaintance with mathematics, and commencing with the works of Deſcartes and

and Malebranche. But being defirous of ftudying the works of Ariftotle and Plato in the original language, he applied with diligence to acquire a knowledge of the Greek, fo that he became able not only to read but to write it. Thus furnifhed, he obtained leave to give lectures in philofophy; in the courfe of which he inftituted a comparifon between the fyftem of Defcartes and that of Newton, avowing a decided preference to the latter; more particularly as it refpects optics and aftronomy. It was by his advice, and under his direction, that Algarotti undertook to compofe a popular treatife on light and colours. Declining to go to Padua for the purpofe of giving lectures, he was appointed librarian to the Inftitute at his native place, and afterwards fecretary, in which office he drew up in Latin an account of the tranfactions of the academy, with a hiftory of its inftitutions, which he continued till the year 1766. This work was rendered peculiarly pleafing and inftructive by the clearnefs of his arrangement, and the excellence of his ftyle; in both which refpects he feems to have formed himfelf on the model of Fontenelle. To thefe tranfactions he was himfelf a contributor; communicating a method of fquaring different fpaces of the hyperbola, and feveral important difcoveries with regard to the circle, fphere, and circumfcribing figures. Of thefe difcoveries he tranfmitted an account to the Academy of Sciences at Montpellier, of which, as well as of the Royal Society of London, he had been elected a member. He alfo difcovered a method of feparating indeterminate quantities, detected feveral errors in philofophy, and profecuted a variety of experiments; on thefe and other fubjects he delivered papers to the Bologna Inftitute, which were publifhed in his commentaries. Several of his papers on the central forces were alfo inferted in the Tranfactions of the Academy. His theorem on the means of determining the velocity of a body drawn or repelled from its centre, in any point of its orbit, were held in high eftimation by Paul Frifius, who availed himfelf of it in the compofition of his work on univerfal gravity. On the fubject of the "Vis viva," which in his time engaged particular attention, he wrote three dialogues in Italian, diftinguifhed for perfpicuity and elegance. In thefe he adopted the opinion of Defcartes in oppofition to that of Leibnitz, who conceived that this force was not to be eftimated from the velocity, as he afferted, but from the fquare of the velocity. The properties of numbers likewife engaged his peculiar attention; and he fhewed, that if any multiple of the number 9 be taken, the fum of the figures forming that multiple will be alfo a multiple of 9. In his fpeculations on moral philofophy, he defended the Peripatetics againft Maupertuis; and his adverfary Anfaldi, in his "Vindiciæ Maupertufianæ," accufed him of depreciating the Catholic religion, as he afcribed too great influence to the Stoic philofophy in alleviating the misfortunes of human life. This controverfy gave occafion to many publications. Zanotti was a poet as well as a mathematician and philofopher, and wrote verfes both in the Tufcan and Latin languages; aiming, in imitation of the moft celebrated poets of Italy, to blend the fuavity of Petrarch with the energy and vigour of Dante. Many of his Italian poems were publifhed by Euftatio Manfredi; and fome of his Latin elegies were edited by J. Antonio Vulpi; who fays of them, that Catullus himfelf would not have been afhamed to acknowledge them. Both his Italian and Latin poems were afterwards publifhed feparately, firft at Florence, and laftly at Bologna; and in this edition are contained imitations of Tibullus, Ovid, and Virgil, as well as of Catullus. After the death of Beccaria, Zanotti, whofe modefty was no lefs confpicuous than his talents and acquirements, accepted the office of prefident of the Inftitute, which he deemed peculiarly honourable, as it was a token of efteem conferred upon him by his countrymen. Among the learned men with whom he maintained intercourfes of friendfhip or correfpondence were the famous anatomift Morgagni, Voltaire, and pope Benedict XIV. He died in the month of January 1777. For an account of his works, which, befides thofe to which we have already referred, were numerous, we refer to "Fabroni Vitæ Italorum Doctrina excellentium;" and for an abftract of their titles, and time and place of publication, to Gen. Biog.

Zanotti, Giovanni Pietro, was born at Paris, though of Italian parentage, in 1674. He was fent young to Bologna, and became a pupil of Lorenzo Paffinelli. Under that mafter he acquired an agreeable tone of colouring, a mellow pencil, and an intelligent acquaintance with the principle of the chiaro ofcuro. He painted feveral altar-pieces for the churches at Bologna, of which the moft efteemed are, the Incredulity of St. Thomas, in the church of S. Tommafo del Mercato; the Refurrection, in S. Pietro; the Nativity, in La Purita; and a large picture in the palazzo publico, reprefenting the ambaffadors from Rome fwearing fidelity to the Bolognefe. He refided great part of his life at Cortona, where he alfo diftinguifhed himfelf by feveral pictures painted for the churches, particularly Chrift appearing to the Magdalen, Chrift bearing his Crofs, and the Murder of the Innocents.

Zanotti was a laborious and intelligent writer on art. Of his numerous publications the moft confiderable is his "Storia dell' Academia Clementina di Bologna," publifhed in two vols. 4to. in 1739. He died in 1765, aged 91. Bryant's Dict.

Zanotti, L'Abate Giancalisto, of Bologna, a difciple of Padre Martini, was born in 1770, of whofe compofition at the annual performance of the mufical ftudents, who were members of the celebrated Philharmonic Society in Bologna, founded in 1666, we heard a *dixit*, in which there were all the marks of an original and cultivated genius. The movements and even paffages were well contrafted; and to make ufe of the language of painters, there were difcernible in it not only light and fhade, but even mezzo tints. He proceeded from one thing to another by fuch eafy and infenfible gradations, that it feemed wholly the work of nature, though conducted with the greateft art. The accompaniments were judicious, the ritornels always expreffed fomething, the melody was new and full of tafte, and the whole was put together with great judgment, and even learning. We have very feldom been more pleafed or completely fatisfied than by this production; and yet the vocal parts were but indifferently executed, for there were then no great fingers at Bologna. We expected to have heard of future works by this moft promifing young compofer, who was one of the maeftri di capella in the church of San Petronio; but as that has not happened, we fear he did not long furvive this performance.

ZANOW, in *Geography*, a town of Pomerania; 6 miles E.N.E. of Cofslin.

ZANTE, an ifland in the Mediterranean, near the coaft of the Morea, about 12 miles in length, and fix in breadth, chiefly inhabited by Greeks, till lately under the Venetians, who appointed a governor, called proveditor, and two counfellors. The Greeks have 40 churches, befides convents, and a bifhop; the Roman Catholics have three convents and a bifhop. By the treaty of Campo Formio, Zante was given to France; but in 1799 it was taken by the united fleets of Ruffia and Turkey, and in the year 1800 connected with other neighbouring iflands, to form a republic of the Seven iflands, named the Ionian, which are to pay a tribute to the

the Porte, and guaranteed both by the Turks and Russians. Corfu, Cephalonia, and some others lately in the possession of Venice, were of this number. The island produces excellent wine, and that species of grapes called currants, olives, figs, melons, peaches, and other choice fruits: towards the coasts, the island is in general mountainous, but level in the interior parts. It is much subject to earthquakes. N. lat. 37° 40′. E. long. 21° 4′.

ZANTE, a town and capital of the island of Zante, situated on the N.E. side, with a harbour safe and commodious for vessels of any size. The town stretches between the harbour and the foot of a mountain about a mile in length, but narrow; the streets are not paved, and the houses in general low. On a mountain above the town is a citadel, which commands the harbour, and contains a little city within its walls. It is to be ascended with difficulty, is strong, and well supplied with stores, and furnished with a garrison. This is the residence of the governor and officers. Zante is the see of a Greek and Latin bishop. There are several churches, and the Jews have a synagogue; 21 miles S.S.W. from the town of Chiarenza in the Morea. N. lat. 37° 50′. E. long. 21° 8′.

ZANTHENES, in *Natural History*, a name given by the ancients to a fossile substance found in Media. Pliny quotes Democritus for saying, that if rubbed in palm wine and saffron, it became soft as wax, and yielded a very sweet smell.

ZANTHER, in *Geography*, a town of Pomerelia; 10 miles S. of Marienburg.

ZANTHORRHIZA, in *Botany*, L'Herit. Stirp. Nov. t. 38. See XANTHORRHIZA.

ZANTHOXYLUM, Linn. Gen. 519. See XANTHOXYLUM.

ZANTHOXYLUM, in *Gardening*, contains plants of the hardy and tender exotic shrubby kinds, in which the species cultivated are, the Canada tooth-ache-tree, or Hercules's club (Z. clava Herculis), and the Chinese tooth-ache-tree (Z. trifoliatum).

The first is a plant of the tree kind, of which there is a variety; the ash-leaved tooth-ache-tree, with oval-oblong folioles, and prickly mid-ribs.

And the last is a woody branching plant.

Method of Culture.—These plants may be increased by seeds and layers. The seeds should be sown in the spring, either in an east border, or in pots placed in the morning sun all the summer, being sheltered in a frame in winter; and in the spring following removed to the full air till October, giving proper waterings all the summer; and towards winter be placed again under shelter from frost till March, when the young plants may be potted separately; and thus continued for a year or two, being sheltered in the winter, when they may be transplanted into the shrubbery, where they are to remain.

The layers of the young wood may be laid down in autumn or early spring, and when they have stricken root be taken off and managed as the seedlings.

They also succeed by cuttings in spring or summer, planted in pots, assisted by a hot-bed, in which they soon strike, when they should be inured to the full air; and the young plants will be fit for planting out in the autumn, or the spring following.

The first is a very ornamental plant in the borders and other dry parts of shrubberies, and the latter among potted plants in the green-house collections.

ZANTOCH, in *Geography*, a town of the New Mark of Brandenburg; 8 miles E. of Landsberg.

ZANZALUS, in *Biography*. See BARADÆUS.

ZANZIBAR, or ZANGIBAR, in *Geography*, an island of Africa, in the Indian sea, near the coast of Zanguebar, governed by a king, who is tributary to the Portuguese. S. lat. 6°. E. long. 41° 15′.

ZANZOUR, a town of Africa, in the country of Tripoli; 15 miles W.N.W. of Tripoli.

ZAOIE, a town of Egypt, on the left bank of the Nile; 13 miles N. of Benisuef.

ZA-OSTROG, a town of Morlachia, near the coast; 15 miles S.E. of Macarska.

ZAOZERSKOI, a town of Russia, in the government of Novgorod, on the Sula; 28 miles W. of Tcherepovetz.

ZAPATA, or SAPATA, a kind of feast, or ceremony, held in Italy, in the courts of certain princes, on St. Nicholas's day, in which people hide presents in the shoes or slippers of those they would do honour to; in such manner, as to surprise them on the morrow, when they come to dress.

The word is originally Spanish, *capato*; and signifies a shoe, or slipper.

It is done in imitation of the practice of St. Nicholas; who used, in the night-time, to throw purses of money in at the windows, for portions to poor virgins in their marriage.

F. Menestrier has described these zapatas, their origin, and different usages, in his Treatise des Ballets Anciens et Moderns.

ZAPATERO, in *Geography*, a small island of Mexico, in lake Nicaragua, near the west coast; 30 miles S.E. of Grenada.

ZAPATILLA LAGOON, a bay on the east coast of Yucatan. N. lat. 18° 52′. W. long. 89° 32′.

ZAPETRA, in *Ancient Geography*, a town of Asia, in the mountains of Comagene, upon a small river, which discharged itself into the Euphrates, S. of that town.

ZAPFENDORF, in *Geography*, a town of Bavaria, in the bishopric of Bamberg; 9 miles N. of Bamberg.

ZAPHOR, a name given by some writers to *Zaffer*; which see.

ZAPOROGIAN COSSACKS, in *Geography*. See COSSACKS.

ZAPOTITLAN, a town of Mexico, in the province of Tlascala; 62 miles S.E. of Puebla de los Angelos.

ZAPOTLAN, a town of Mexico, in the province of Mechoacan; 25 miles N. of Colima. N. lat. 20° 10′. W. long. 104° 36′.

ZAPPANIA, in *Botany*, was so named by Scopoli, in honour of Paul Anthony Zappa, an Italian botanist, to whom the public garden at Pavia was indebted for many valuable communications. The French, not always exact in orthography, will have it *Zapania*, and they have misled our more accurate countryman Mr. Brown, who follows Jussieu and Lamarck in adopting this genus, in his Prodr. Nov. Holl. v. 1. 514. Scopoli published it in his Deliciæ Floræ et Faunæ Insubricæ, v. 1. 34. t. 15. The species, on which he founds the genus, and which he erroneously suspected might be the *Lantana involucrata* of Linnæus, is the *Verbena globiflora* of L'Heritier. (See VERBENA, n. 3.) We do not find it necessary or expedient to retain *Zappania* as a distinct genus.

ZAPUNTELLO, in *Geography*, a town of the island of Melada, which sometimes gives name to the island.

ZAQUALPAN, a town of Mechoacan, in the province of Mechoacan; 6 miles S. of Zacatulà.

ZARA, a city and sea-port of Dalmatia, see of an archbishop, situated in a district, called "The County of Zara," which was purchased of the king of Naples, in the year

1409, by the Venetians, in whofe hands it afterwards continued. Zara is furrounded on all fides by the fea, except that it has a communication eaftward with the continent, by means of a draw-bridge, commanded by a fort. It is reckoned one of the beft fortifications in Dalmatia, and deemed almoft impregnable. The citadel is divided from the town by a very deep ditch, hewn out of a rock. The harbour, which lies to the north, is capacious, fafe, and well guarded. The rain is carefully preferved in cifterns, to fupply the want of frefh water. In the caftle refides the governor or proveditor of Dalmatia, whofe office is only triennial. It now belongs to the kingdom of Italy; 28 miles N.W. of Scardona. N. lat. 44° 22′. E. long. 15° 38′.

Zara *Vecchia*, *Old Zara*, or *Biograd*, or *Alba Maritima*, a town of Dalmatia, now little better than a village. In the time of the Romans it was a place of confiderable figure, and received a new fet of inhabitants by a numerous colony of that people. In the middle ages it was called *Belgrad*, or *Alba Maris*, and more anciently *Blandona*. According to fome it was ruined by Attila; but we know with more certainty that it was deftroyed in the war between the Venetians and the Hungarians, by the doge Ordelafo Falieri. Some banditti afterwards mixing with the inhabitants that remained, the republic, to check their exceffes, ordered a general maffacre of the robbers, in which the ancient inhabitants were not fpared. Here was alfo a bifhop's fee, which, on the demolition of the town, was removed to Scardona; at prefent its inhabitants confift only of a few peafants; 18 miles S.E. of Zara.

Zara. See Scharedsje.

Zara, in *Ancient Geography*, a town of the Moabites, taken by Alexander Jannæus.—Alfo, a town of Afia, towards Armenia, upon the route from Arabiffum to Satala, between Eumeæ and Dagolaffum. Anton. Itin.

ZARAISK, in *Geography*, a town of Ruffia, in the government of Riazan, on the Ofer; 24 miles S.W. of Riazan. N. lat. 54° 30′. E. long. 38° 24′.

ZARAMA, in *Ancient Geography*, a town of Afia, in the interior of Media. Ptolemy.

ZARANDA, a name anciently given to the Euphrates.

ZARANG, the *Zarange* of Ptolemy, in *Geography*, a populous city of Perfia, in the province of Segeftan or Seiftan, fituated pleafantly on the banks of the Hearmund. This was the cuftomary refidence of Jacob Ben Lath, the conqueror of the caliph of Bagdad, and ftood a long fiege againft Timur, by whom it was at laft taken. Zarang is fuppofed to be the fame with the prefent Doofhak, the old name having been loft in the revolutions to which this province has been fubject for more than a century, and to which its prefent defolated ftate may, in a great meafure, be attributed. For a further account of it, fee Segestan.

ZARANIS, in *Ancient Geography*, a town of Afia, in the interior of Media. Ptolemy.

ZARATE, Augustine de, in *Biography*, a Spanifh hiftorian, was fent by Charles V. in 1543 to South America, as comptroller-general in Peru and Terra Firma; and having collected all the memoirs he could procure, he compofed his work "Del Defcubrimento y Conquifta de la Provincia del Peru," firft printed at Antwerp in 1555, 8vo. and reprinted at Seville, 1577, folio: the firft edition being regarded as moft authentic. It has been tranflated into Italian and French, and is commended as a work of reputation and credit by Dr. Robertfon. Moreri. Robertfon's America.

Zarate, in *Geography*, a town of South America, in the province of St. Martha; 15 miles S. of Teneriffe.

ZARAYOS, or Sharayos, a fuppofed lake of America, in the courfe of the river Paraguay, which only exifts during the annual inundations, that are on a far grander fcale than thofe of the Ganges, and may be faid to deluge whole provinces.

ZARCA, a town of Egypt, on the eaft branch of the Nile; 10 miles S. of Damietta.

ZARCHAS, or Tcharkas, a town of Perfia, in the province of Chorafan, or Khoraffan; 150 miles N. of Herat.

ZARCOIA, a town of Perfia, in the province of Segeftan; 12 miles W. of Zarang.

ZARDAM. See Sardam.

ZARE, a town of Perfia, in the province of Chorafan, or Khoraffan, on the north fide of a lake fo called; 70 miles S. of Herat.—Alfo, a lake of Perfia, in the province of Segeftan; 60 miles N. of Zarang. See Zerreh.

ZARED, in *Ancient Geography*, a torrent beyond Jordan, on the frontier of the Moabites. This torrent had its fource in the mountains, E. of the country of Moab, and proceeding from the E. to the W. difcharged itfelf into the Dead fea. The Ifraelites paffed it 38 years before their departure from Kadefh-Barnea. Numb. xxi. 12. Deut. ii. 13, 14.

ZAREPHATH. See Sarepta.

ZARESH-SHEKER, or Sarat-Afer, a city of Reuben, beyond Jordan. Jofh. xiii. 19.

ZARETHÆ, or Zaretæ, a people comprifed under the name of Scythians, on this fide of the Imaus, fouth of mounts Maffæi and Alani. Ptol.

ZAREX, a port of Laconia, on the Argolic gulf, S. of Cyphanta. Near this port was a temple of Apollo, with a ftatue of this god, holding in his hand a lyre. To the fouth, and parallel to the coaft, was a mountain called Zarex.

ZARFA, in *Botany*, a name given by Leo Africanus, and others, to the *lotus*, or nettle-tree.

ZARGIDAVA, in *Ancient Geography*, a town fituated on the bank of the river Hierafus, in the interior of Lower Mœfia, a little above Tamafiava.

ZARIASPA, or Zariaspe, a town of Afia, in Bactriana, watered by a river of the fame name, which difcharged itfelf into the Oxus. Strabo. It was alfo called Bactra. Steph. Byz.

ZARIFU, a word by which fome of the chemical writers have expreffed tin.

ZARIK, in *Geography*, a town of European Turkey, in the Morea; 22 miles E. of Mifitra.

ZARIMA, a town of South America, in the province of Quito; 220 miles S. of Quito. S. lat. 3° 36′. W. long. 79° 36′.

ZARJON, a town of South America, in the government of Buenos Ayres; 300 miles N.N.W. of Buenos Ayres.

ZARLINO, Giuseppe *da Chioggia*, maeftro di capella of St. Mark's church at Venice, and the moft general, voluminous, and celebrated theorift and writer on mufic in the Italian language during the 16th century, was born in 1540, and author of the following mufical treatifes, which, though feparately printed, and at different periods, are generally bound up together in one thick folio volume:—"Inftitutioni Harmoniche," Venice, 1558, 1562, 1573, and 1589; "Dimoftrationi Harmon." Ven. 1571, and 1589; and "Sopplimenti Muficali," Ven. 1588. We difcover by thefe dates, that Zarlino firft appeared as an author at the age of 18; and from that period till he had arrived at 49, he was continually revifing and augmenting his works. The

Z A R

The muſical ſcience of Zarlino, who died in 1599, may be traced in a right line from the Netherlands: as his maſter Willaert, the founder of the Venetian ſchool, was a diſciple of John Mouton, the ſcholar of the great Joſquin.

A commentary upon the voluminous writings of this author would occupy too large a portion of our work; and to refer the reader to the analyſis of his ſeveral treatiſes by Artuſi would be doing him little ſervice, as the writings of Artuſi would be difficult to find. There are few muſical authors whom we have more frequently conſulted than Zarlino, having been encouraged by his great reputation, and the extent of his plan, to hope for ſatisfaction from his writings concerning many difficulties in the muſic of the early contrapuntiſts; but we muſt own, that we have been more frequently diſcouraged from the purſuit by his prolixity, than enlightened by his ſcience: the moſt trivial information is involved in ſuch a crowd of words, and the ſuſpenſe which it occaſions is ſo great, that patience and curioſity muſt be invincible indeed to ſupport a muſical inquirer through a regular peruſal of all his works.

He begins his Inſtitutes with a panegyric upon muſic, in the uſual ſtrain; then we have its diviſion into mundane and humane, faithfully drawn from Boethius; after this, there is a great waſte of words, and parade of ſcience, in attempting to explain the ſeveral ratios of greater and leſs inequality, proportion, and proportionality, &c. where, in his commenting on Boethius, we have diviſions of muſical intervals that are impracticable, or at leaſt inadmiſſible, in modern harmony.

In his account of the ancient ſyſtem, he diſcovers much reading; and that is what he chiefly wiſhes the reader ſhould know.

In deſcribing the diatonic genus, in which the tetrachord is divided into tone major, tone minor, and major ſemitone: $\frac{9}{8}$, $\frac{10}{9}$, and $\frac{16}{15}$, for which diviſion, commonly called the ſyntonous, or intenſe of Ptolemy, he conſtantly contends, we have the ſubſtance of his diſpute with Vincenzio Galilei, which will be mentioned hereafter. The ſecond part of his Inſtitutes is chiefly employed in meaſuring and aſcertaining intervals by means of the *monochord*, and an inſtrument called the *meſolabe*, which is ſaid to have been invented either by Archytas of Tarentum, or Eraſtohenes, for the purpoſe of *halving* an interval. Whether the practical muſicians of antiquity applied theſe calculations or imaginary diviſions to their flutes and lyres, we know not; but of this we are moſt certain, that the greateſt performers of modern times are Ariſtoxenians, and make the *ear* the only inſtrument of calculation; which, by means of harmony, and the conſtant opportunities of compariſon which the baſe or other accompaniment affords them, during performance, is rendered a much more truſty guide than it could be in playing a ſingle part. It ſeems, however, as if the ancient inſtruments, upon which all the tones are *fixed*, had more need of the aſſiſtance of calculation and mathematical exactneſs in regulating their intervals than thoſe of the violin-tribe at preſent; which, except in the open ſtrings, which often lead the performer to erroneous intonation, depend on the ſtrength and dexterity of the muſician's hand, and accuracy of his ear, *during performance*. See an ingenious and uſeful work, called "Eſſay upon Tune," publiſhed at Edinburgh, 1781; where the imperfections in the ſcales of modern inſtruments are clearly ſhewn, and remedies for correcting them preſcribed.

The elements of counterpoint, and fundamental rules of compoſition, which chiefly concern the practical muſician, are given in the third part of the Inſtitutes; and theſe are more ample, and illuſtrated with more examples, than in any preceding writer; particularly the laws of canon and fugue, for which no inſtructions have been given by Franchinus, though they were in ſuch high favour during his time. P. Aaron and Vicentino have indeed ſtarted the ſubject, but the purſuit of it was left to Zarlino.

In the fourth part of the Inſtitutes we have a ſhort hiſtorical account of the inventors of the ſeveral eccleſiaſtical modes: it is, indeed, a mere ſkeleton of aſſertions or conjectures without proof, more derived from traditional than written evidence. He here likewiſe gives inſtructions for compoſing in all theſe modes, in which he religiouſly keeps within their legal limits, and ſubmits to all the reſtraints which antiquity had preſcribed.

Padre Martini, ſaggio di contrappunto, in recommending the ſtudy and imitation of ancient maſters, has well deſcribed the difficulties they had to encounter; where, after confronting the eccleſiaſtical ſcales with the ſecular, we have the following paſſage: "From an attentive and comparative view of theſe ſcales, any one deſirous of learning the art of counterpoint for the ſervice of the church, will ſee what diligence and efforts were neceſſary to unite the different qualities of canto-fermo and canto-figurato; and by carefully examining the examples given of both, will diſcover what artifices were uſed by ancient maſters to avoid ſuch ſounds as differed from the canto-fermo, and with what parſimony they admitted ſuch accidents as canto-figurato requires, particularly in the third and fourth tones; where, inſtead of modulating into B *mi*, the 5th of the mode or key, as is conſtantly practiſed at preſent, they have paſſed to the key of A in the fourth tone, and C in the third, by which means they have been able, dexterouſly, to unite the different qualities of canto-fermo with thoſe of canto-figurato."

He gives excellent rules for compoſing motets and madrigals; but it is remarkable, that he adviſes the compoſer to make the *tenor* proceed regularly through the ſounds of the mode he ſhall chooſe; and above all, that this part be ſo much the more ſmooth, regular, and beautiful, as the reſt are to be built upon it; whence, ſays he, its ſounds may be called the nerves and ligaments of all the other parts: by which it appears that the cantilena, or principal melody, was not given, as it is by modern compoſers, to the *ſoprano*, or *higheſt* part; that caſtrati were not ſo common as at preſent; and that the tenor being the kind of voice moſt eaſily found, and more generally good than that of any other pitch, was judiciouſly honoured with the principal melody.

Zarlino ſays, that ſo great was the rage for multiplying parts in muſical compoſitions, that ſome maſters, not content with three or four, which ſufficed to their predeceſſors, had increaſed them to fifty; from which, he truly obſerves, nothing but noiſe and confuſion could ariſe. However, in another part of his book, he tells us, that Adriano Willaert had invented maſſes *à Due Cori, over a tre*, or, as ſome call them, *à Cori Spezzati*, which had an admirable effect. We know not how Okenheim diſpoſed his thirty-ſix parts in the motet already mentioned; but they would have furniſhed nine choirs of four voices each. In the large churches of Italy, where the performers are divided into two bands, placed in oppoſite galleries, all the imitations and ſolo parts are diſtinctly heard, and when united in at leaſt eight *real* parts, completely fill the ears of the audience with all the charms of congregated ſound.

ZARMISOGETUSA Regia, in *Ancient Geography*, a capital town of Dacia, upon the river Sargetia. When this city became a Roman colony, it joined to its ancient name "Colonia Ulpia Trajana," or that of "Auguſta Dacica."

ZARN, in *Geography*, a town of the duchy of Berg; 4 miles E. of Duifburg.

ZARNAB, in the *Materia Medica*, a term ufed by Avicenna and Serapio to exprefs the carpefia of the ancient Greeks.

ZARNACH, the fame as the word *zarnich*, the name of the orpiment of the Arabians.

It was not confined, however, to this fenfe alone, but was ufed as a name for other things ufed in painting, and particularly for the *lapis armenus*. However, Diofcorides and Theophraftus call the *lapis armenus* by the name of *armenion*, and the *zarnach* by that of *arrenecon*, that is, orpiment.

ZARNAK, in *Geography*, a town of Turkeftan, on the Sirr; 100 miles W. of Toncat.

ZARNATA, a town of European Turkey, in the Morea; 16 miles S.W. of Mifitra.

ZARNAW, a town of Poland, in the palatinate of Sandomirz; 32 miles N. of Sandomirz.

ZARNICH, in *Natural Hiftory*, the name of a genus of foffils, the characters of which are thefe: They are inflammable fubftances, not compofed of plates or flakes, but of a plain, fimple, and uniform ftructure, not flexile nor elaftic, foluble in oil, and burning with a whitifh flame, and noxious fmell, like garlic.

That thefe foffils are really fulphuretted arfenics is evident from fundry experiments. When fet on fire, the arfenical as well as the fulphureous fmell is plainly diftinguifhable. If triturated with quickfilver, and expofed to a fuitable heat, the fulphur is detained by the mercury, and a pure white arfenic fublimes. A mixture of fixed alkaline falt, with any vegetable or animal fubftance, as the compound called by the affayers black flux, in like manner keeps down the fulphur, and at the fame time revives the arfenic into its reguline or metallic form. Thefe native minerals have been ufed as medicines in the eaftern countries, and by fome imprudently recommended in our own. Lewis.

Of this genus there are four known fpecies: a red one, which is the true Sandarach; a yellow one, found in the mines of Germany, and brought to us under the name of orpiment; a greenifh one, common alfo in the mines of Germany, and fold in our colour-fhops under the name of a coarfe orpiment; it is alfo found in the tin-mines of Cornwall; and a whitifh one, which has the property of turning black ink into a florid red, common in the mines of Germany, but of little value. Hill.

ZARNOWITZ, in *Geography*, a town of Pruffian Pomerelia, on a bay of the Baltic; 40 miles N.N.W. of Dantzic.

ZARNOWNO, a town of Auftrian Poland, in the kingdom of Galicia, on the Dniefter; 15 miles N.W. of Halicz.

ZAROW. See SORAW.

ZARP, a river of Afia, which runs into the Tigris, 40 miles below Mofful.

ZARPANA, or ROTA, or ST. ANN, one of the Ladrone iflands, about 40 miles in circumference, with a port on the S. coaft, and another on the N.W. coaft; 21 miles from Guam.

ZARUANA, in *Ancient Geography*, a town of Afia, in Greater Armenia. Ptolemy.

ZARUBINA, in *Geography*, a town of Ruffia, in the government of Irkutfk; 60 miles N.W. of Ilimfk.

ZARUMA, a town of South America, in the audience of Quito.

ZARUTHAN, in *Surgery*, a word ufed by fome to exprefs a hard and unequal tumour of the breaft, attended with a burning heat, and a violent but not continual pain.

This is by fome referred to the cancer, and accounted a fpecies of that terrible diforder: its caufe is fuppofed to be a fharp ichorous humour in the blood.

ZARZA, in *Geography*, a town of Spain, in Eftremadura; 22 miles S.W. of Plafencia.

ZARZEDO, a town of Portugal, in Eftremadura; 20 miles N.E. of Caftel Branco.

ZARZINA. See SARSINA.

ZASAWA, a town of Bohemia, in the circle of Kaurzim; 8 miles S.W. of Kaurzim.

ZASHIVERSK, a town of Ruffia, in the government of Irkutfk; 1320 miles N.N.E. of Irkutfk. N. lat. 67° 25′. E. long. 138° 14′.

ZASLAW, a town of Poland, in Volhynia; 24 miles N. of Conftantinow.

ZASMUKI, a town of Bohemia, in the circle of Kaurzim; 4 miles S.S.E. of Kaurzim.

ZASNARAS, a town of Tranfylvania; 16 miles S.W. of Weiffemburg.

ZASPEL, in *Commerce*, a meafure for linen and yarn at Leipfic; where a piece of woollen or cotton yarn confifts of 4 ftrehns, or 12 zafpels, and a piece of linen yarn confifts of 6 ftrehns, or 12 zafpels. A zafpel contains 20 gebinds, 400 fadens, or 1600 ells.

ZATETZ, in *Geography*. See SAATZ.

ZATHAG, or ZATAG, a town of Arabia, in the province of Hedsjas; 20 miles S.E. of Karac.

ZATHUA, in *Ancient Geography*, a town of Afia, in Greater Armenia. Ptol.

ZATIBA, in *Geography*, a town of South America, in New Grenada; 36 miles N.N.E. of Tunja.

ZATMAR, a town of Hungary. This is properly two towns, namely, Zatmar, on an ifland in the river Samos; and Nemethi, oppofite to it, on an arm of the river: but in the year 1715, both were erected into one town; the firft of which is fortified. The reformed held a national fynod here in 1646; 56 miles N.N.W. of Colofvar. N. lat. 47° 47′. E. long. 22° 24′.

ZATOR, a ftrong town of Auftrian Poland, in Galicia; 22 miles W.S.W. of Cracow.

ZATSCHIT KABANOVSKAIA, a fort of Ruffia, in the government of Kolivan; 20 miles S. of Biifk.

ZATUENEBO, a town of the ifland of Cuba; 65 miles S.S.E. of Havannah.

ZATURCE, a town of Poland, in Volhynia; 20 miles W.S.W. of Lucko.

ZAUALA, a town of Mexico, in the province of Mechoacan; 110 miles N. of Mechoacan.

ZAUARA, a river of Africa, which runs into the Indian fea, S. lat. 24° 15′.

ZAVARA. See ASINARA.

ZAUDNITZ, a town of Silefia, in the principality of Troppau; 9 miles N.N.E. of Troppau.

ZAUECES, in *Ancient Geography*, a people of Africa, in the weftern part of Libya, and in the vicinity of the Libyans Mexycans. According to Herodotus, when thefe people went to war, their wives conducted their cars or chariots.

ZAUED UL BAHRI, in *Geography*, a town of Egypt, on the left bank of the Nile; 8 miles S. of Shabur.

ZAVEL, a river of Perfia, which paffes through Chorafan, or Khoraffan, and lofes itfelf in lake Zare, or Zarreh.

ZAVELSTEIN, a town of Wurtemberg, near which is a medicinal fpring; 2 miles N. of Bulach.

ZAVIDEI, an ifland of Ruffia, at the entrance of the gulf

gulf of Tchaunſkaia, in the Frozen ſea; about 60 miles in circumference. N. lat. 71° 50′ to 72° 20′. E. long. 166° 14′.

ZAVODE BIRUILEVA, a town of Ruſſia, in the government of Irkutſk, on the Argunia; 121 miles N.E. of Stretenſk.

ZAVODE *Dutcharſkoi*, a town of Ruſſia, in the government of Irkutſk; 88 miles S.E. of Stretenſk.

ZAVODE *Gazimurſkoi*, a town of Ruſſia, in the government of Irkutſk; 44 miles S.S.E. of Stretenſk.

ZAVODE *Irbinſkoi*, a town of Ruſſia, in the government of Kolivan; 40 miles E. of Abakanſk.

ZAVODE *Kutamarſkoi*, a town of Ruſſia; 100 miles E.S.E. of Nertchinſk.

ZAVODE *Lanina*, a town of Ruſſia, in the government of Irkutſk, on the W. coaſt of the Baikal lake; 80 miles N.E. of Irkutſk.

ZAVODE *Midnoi Kuruzulaevſkoi*, a town of Ruſſia, in the government of Irkutſk; 32 miles S. of Nertchinſk.

ZAVODE *Niznei Suzuiſkoi*, a town of Ruſſia, in the government of Kolivan; 32 miles S.E. of Kolivan.

ZAVODE *Novopavlovſkoi*, a town of Ruſſia, in the government of Kolivan; 80 miles S.S.E. of Kolivan.

ZAVODE *Popovo*, a town of Ruſſia, in the government of Kolivan. N. lat. 56° 31′. E. long. 95° 32′.

ZAVODE *Sibiria Kova*, a town of Ruſſia, on the Argunia; 100 miles E.S.E. of Stretenſk.

ZAVODE *Tiſova*, a town of Ruſſia, in the government of Irkutſk, on the river Poim; 124 miles N.N.W. of Niznei Udinſk.

ZAVODE *Verchoturova*, a town of Ruſſia, in the government of Irkutſk, on the Argunia; 132 miles N.E. of Stretenſk.

ZAVOLOCZE, a town of Ruſſia, in the government of Polotſk; 50 miles N.E. of Polotſk.

ZAURGATCH, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 80 miles E.S.E. of Tobolſk.

ZAUROS, in *Ichthyology*, a name given by the ancient Greeks to that fiſh which we call ſaurus and lacertus, and which is called at Rome the tarantula.

It is diſtinguiſhed by Artedi by the name of the oſmerus, with eleven rays in the pinna ani; and in the Linnæan ſyſtem it is the ſalmo ſaurus, with ten rays in the pinna ani.

ZAUZAN, in *Geography*, a town of Perſia, in the province of Chorafan; 70 miles N.W. of Herat.

ZAWAJA, a lake of Abyſſinia, in the ſouthern extremity of the kingdom, which is the chief ſource of the river Hawaſh.

ZAWEH, a diſtrict or province of Perſia, bounded on the N. by Karaſm, on the E. by Choraſan, on the S. by Mazanderan, and on the W. by the Caſpian ſea.—Alſo, a town of Perſia, and capital of a diſtrict, on the river Tedjen, about 24 miles from the Caſpian ſea; 81 miles N. of Meſchid.

ZAWICHOST, a town of Poland, in the palatinate of Sandomirz; 8 miles N. of Sandomirz.

ZAWIEH, a town of Aſiatic Turkey, in the government of Diarbekir, on the Euphrates; 24 miles E. of Anah.

ZAWILA. See ZUBELA.

ZAWOLOW, a town of Auſtrian Poland, in Galicia; 20 miles N.E. of Halicz.

ZAXO SULTAN, a town of Aſiatic Turkey, in the government of Diarbekir; 5 miles S. of Rahabeh.

ZAYRE. See ZAIRE.

ZAYTE, a river on the W. ſide of the iſland of Celebes, which runs into the ſea, N. lat. 30′. E. long. 120° 15′.

ZAZIMOWICZE, a town of Lithuania, in the palatinate of Brzeſk; 32 miles N.E. of Brzeſk.

ZAZIVNOI, a fort of Ruſſia, in the government of Upha, on the Ural; 68 miles W. of Orenburg.

ZBANITZ, a town of Bohemia, in the circle of Chrudim; 5 miles E. of Hohenmant.

ZBARAS, a town of Poland, in the palatinate of Braclaw; 36 miles N. of Braclaw.

ZBIROW, a town of Bohemia, in the circle of Beraun; 12 miles S.W. of Beraun.

ZBORRI, a town of Hungary; 16 miles N.N.E. of Szeben.

ZBORROW, a town of Auſtrian Poland, in the new kingdom of Galicia, near which an obſtinate battle was fought between the Poles on one ſide, commanded by their king John Caſimir, and the combined army of the Coſſacks and Tartars on the other. In this engagement the latter were defeated, and left 10,000 men dead on the ſpot; but the day after, a treaty of peace was concluded on terms diſadvantageous to Poland; 63 miles E. of Lemberg.

ZBRASLAWIZ, a town of Bohemia, in the circle of Czaſlau; 10 miles S.W. of Czaſlau.

ZDANICHA, a river of Ruſſia, which runs into the Chatanga, N. lat. 70° 40′. E. long. 98° 14′.

ZDAUNSKY, a town of Moravia, in the circle of Hradiſch: 15 miles N. of Hradiſch.

ZDIAR, a town of Bohemia, in the circle of Prachatitz; 8 miles N.W. of Horaſdiowiz.

ZDISLAWITZ, a town of Bohemia, in the circle of Kaurzim; 10 miles S.E. of Beneſchow.

ZDZIECOL, a town of Lithuania, in the palatinate of Novogrodeck; 12 miles W. of Novogrodeck.

ZEA, in *Botany*, a name borrowed from the ancient Greeks, whoſe ζεια, however, appears to have been ſome kind of *Triticum* or *Hordeum*, agreeing with our preſent American genus, the Maize, only as being a grain cultivated for the food of man.—Linn. Gen. 480. Schreb. 621. Willd. Sp. Pl. v. 4. 200. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 235. Purſh 46. Juſſ. 33. Lamarck Illuſtr. t. 749. (Mays; Tourn. t. 303—305. Gærtn. t. 1.)—Claſs and order, *Monoecia Triandria*. Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. corrected by Schreber. Male flowers diſpoſed in diſtinct lax ſpikes. *Cal.* Glume two-flowered, of two ovate-oblong, ſwelling, pointed, beardleſs valves, the outermoſt rather the longeſt. *Cor.* Glume of two oblong beardleſs valves, about the length of the calyx; the outermoſt ſwelling, obtuſe; the innermoſt terminating in two teeth. Nectary of two very ſhort fleſhy ſcales, dilated upwards, abrupt, furrowed at the ſummit. *Stam.* Filaments three, capillary; anthers ſomewhat priſmatic, cloven, burſting at the top.

Female flowers in a very denſe ſpike, below the male, on the ſame plant, concealed by the leaves. *Cor.* Glume ſingle-flowered, of two permanent, roundiſh, thick valves, membranous and fringed at the margin; the outer one thickeſt. *Cor.* Glume of four unequal, membranous, tranſparent, broad, ſhort, permanent valves. *Piſt.* Germen very ſmall; ſtyle thread-ſhaped, extremely long, pendulous; ſtigma ſimple, downy towards the ſummit. *Peric.* none. *Common Receptacle* very large and long, with five or more angles, and as many rows of cells, tranſverſely excavated, in each of which are imbedded the fruits of two flowers, ſurrounded with their own calyx and corolla. *Seed* ſolitary, roundiſh,

roundiſh, ſtalked, longer than the glumes; angular and compreſſed at the baſe.

Obſ. Two out of the four valves of the female corolla appear to belong to an abortive flower. *Schreber.*

Eſſ. Ch. Male flowers in diſtinct ſpikes. Calyx a two-flowered beardleſs glume. Corolla beardleſs.

Female, Calyx a glume of two valves. Corolla of four valves. Style one, thread-ſhaped, pendulous. Seeds ſolitary, imbedded in an oblong receptacle.

1. Z. *mays.* Common Maize, or Indian Corn. Linn. Sp. Pl. 1378. Willd. n. 1. Ait. n. 1. Purſh n. 1. (Frumentum indicum; Camer. Epit. 186. F. aſiaticum, turcicum et indicum; Ger. Em. 81, 82. Moriſ. ſect. 8. t. 13. f. 1, 2, 3.)—Leaves entire. — Native of America. Cultivated there, as well as in the ſouthern countries of Europe. One of the largeſt of the family of corn or graſſes. *Root* annual, of innumerable fibres. *Stem* erect, ſomewhat branched, round, ſtout, jointed, leafy, from five to ten feet high. *Leaves* ſheathing, lanceolate, concave, acute, ribbed, two or three feet long, and three or four inches broad. *Male flowers* in numerous, aggregate, terminal *ſpikes*, each three or four inches long, greyiſh, downy, with purple *anthers*. *Female ones* below, in a generally ſimple, cylindrical ſpike, covered by the large ſheaths of the upper leaves. *Styles* ſix or eight inches long, very numerous, of a ſhining yellowiſh or reddiſh hue, hanging down like a long ſilken taſſel. *Seeds* white, yellow, red, or purpliſh, forming a heavy, teſſellated, cone-like, naked *ſpike*, from ſix to ten inches long. There are innumerable varieties, in the ſize, figure, colour, and qualities of the grain, which, though valuable for many purpoſes, and yielding an abundant crop, is far inferior to wheat as a bread corn. It requires a richly manured ſoil. Mr. Purſh mentions a variety, brought lately by governor Lewis from the Mandan nation, on the Miſſouri, which promiſes to be particularly valuable, as ripening earlier than any other ſort, and yielding an excellent produce. See Maize.

2. Z. *Curagua.* Chili Maize. “Molina Chil. German edition, 107.” Willd. n. 2.—Leaves ſerrated.—Native of Chili. Annual. Smaller in all its parts than the foregoing. *Molina.* Of the qualities or hiſtory of this ſpecies, we have no further account.

Zea, in *Gardening*, contains a plant of the hardy herbaceous annual kind, of which the ſpecies cultivated is the maize, or Indian corn (Z. mays).

It has a large ſtrong, herbaceous ſtalk, which ſometimes riſes to the height of ten or twelve feet; and there are varieties; with yellowiſh-white ſeeds, with deep yellow ſeeds, and with purple-blue ſeeds. This plant is moſtly cultivated in the garden and pleaſure ground for the ſake of its ſingular tall growth.

Method of Culture.—Theſe plants may be raiſed by ſowing feed in the ſpring, as March or April, in a dry warm ſituation, where the plants are intended to remain, in patches of two or three ſeeds or more in each, about an inch and a half deep: when the plants are come up, they ſhould be thinned out to one or two of the ſtrongeſt. But to have the plants more forward, ſo as to produce ripe ſeed-ſpikes more effectually, ſome ſhould be ſown in a hot-bed at the ſame time, and when the plants are three or four inches high, be forwarded by pricking them out upon another hot-bed, either under a deep frame, or an awning of hoop arches, to be covered with mats occaſionally, allowing them plenty of free air; and when they have ſufficient growth, as in May, they may be tranſplanted, with balls of earth about their roots, into the full ground in the borders or ſhrubbery clumps, in warm ſunny ſituations, being well watered; and when the ſummer proves warm and dry, they often produce perfect heads, and the ſeeds ripen in a good manner.

As the plants moſtly run up in tall ſtalks, it is proper to ſupport each with a tall neat ſtake, eſpecially where much expoſed to wind and rain.

Theſe plants in the different varieties have a fine effect in the back parts of borders, clumps, and other places, in warm ſheltered ſituations.

It is obſerved by a late writer, that he has planted a ſmall quantity of this ſort of grain in his garden, and it turned out ſuperior to his expectations; and he is of opinion, that this crop may be raiſed to advantage in the field on ſome light ſoils, particularly the poor ſands of Norfolk and Suffolk, or on any hot burning lands; as the countries where it grows naturally are light hot ſoils. And he adds, that he prefers the drill method of culture for it in this country; as the ſmall hillocks in planting the ſeeds ſeparately make the land unſightly and improper for other crops. But to raiſe the greateſt produce in corn, the hills are, he conceives, the beſt way; however if the crop is intended chiefly for fodder, then drills are beſt. The ſeed is to be put about an inch deep in the ground. And that when the corn firſt appears above the ſurface, the hillocks or drills muſt be examined, to ſee whether it all comes up properly; and if it has not, there muſt be freſh ſeeds put into the vacant places to prevent a loſs in the crop. And as ſoon as the plants take root in the ground, the crop ſhould be examined again to ſee whether any have died away, or the birds have taken the ſeed. The plants muſt alſo be thinned to two on a hill, and good plants ſubſtituted for weak ones.

In the cultivation while growing in the hill-way, the hoe muſt be uſed at every operation to the plants, and earth be given to them, as the land cannot be made too light for this crop; but when in drills, the corn muſt be hoed in the ſame manner as garden peas.

He alſo further obſerves, that when the corn gets out of the milk, the blades below muſt be all pulled off while green: tie them up in ſmall bunches, about the ſize of a birch-broom, and hang them on the top of the ſtalks of the corn; for at the ſame time that the blades are pulled, the tops muſt be cut off, and ſet up in round bunches to dry, and tied round the topmoſt part to keep them from falling: when theſe are dry, they muſt be harveſted. The blades are generally ready in four or five days, but the tops take longer; when theſe blades and tops are properly harveſted, they are excellent food. And it is ſuggeſted, that as theſe proceſſes will be finiſhed about the end of Auguſt, the land might be ploughed and then ſown with rye. If ſeeds were required, he is of opinion that it would be very proper to ſow the ſeeds at that time on this poor hot land; as the warm ſeaſon would be over, and the ſeeds would have ſufficient time to take root before winter. If only rye was wanted, he would eat it with ſheep in the ſpring or during the winter. But the ſtalks muſt, he ſays, ſtand, for the corn to ripen after the rye is ſown; and the corn ought to hang on the ſtalk till it is hard. In America, it is often December before the white corn can be pulled, or September for the yellow corn: if it is pulled before it is hard, and the cob is perfectly dry, it will mould and ſpoil, and the corn will be apt to rot, therefore great care ſhould be taken not to pull it too ſoon.

This ſort of corn is, it is ſaid, given to horſes, cattle, and hogs, without ſhelling, and only huſked in the ear; but when given to fowls, or intended for ſale, it is rubbed off by burning a cob in the fire till hard, and then rubbing the corn with it. It is a sort of grain which is sometimes given to pigs, but more frequently when ground to fowls. Count Rumford has shewn in his Essay on Food, that this is perhaps the most nutritious grain, except wheat, either as human sustenance, or as provender for brute animals. See MAIZE.

ZEA, in *Geography*. See ZIA.

ZEAGONG, a town of Birmah; 12 miles N.N.W. of Raynangong.

ZEAL, ZELUS, Ζηλος, the exercise of a warm animated affection, or passion, for any thing.

Some will have jealous *zeal* to be properly a mixed or compound sensation, where one affection is raised or inflamed by another. On these principles, jealousy may be defined an affection arising from love and indignation, which cannot bear a thing to be given to another, that a person desires for himself, or one whom he loves and favours. Others make it consist in an eager study, or desire, to keep any thing inviolate; or a fervour of mind, arising from an indignation against those who abuse or do evil to a person beloved.

The Greek philosophers make three species of *zeal*. The first, of *envy*; the second, of *emulation*, or imitation; the third, of *piety*, or devotion; which last makes what the divines call *religious zeal*.

Josephus speaks much of a party, or faction, called the *Zealous*, or *Zealots*, which arose among the Jews during the war with Vespasian and Titus. Lib. xiv. cap. 6. Antiq. and lib. iv. cap. 12. de Bello Judaico.

ZEALAND, or ZEELAND, or *Seeland*, (in Danish *Sizland*,) in *Geography*, the largest island belonging to the kingdom of Denmark, bounded on the north by the Scaggerac, on the east by the Sound, on the south by the Baltic, and on the west by the Great Belt; about 65 miles in length from north to south, and where widest 60 from east to west, though in some parts scarcely 30, and in no part above 20 miles from the sea: reckoned about 700 miles in circumference. The coast is much intersected with large bays; and within the country are several lakes, which, as well as the rivers, abound in fish. The country is pleasant; the soil is generally fertile, and produces corn, chiefly barley and oats, more than sufficient for the inhabitants, with excellent pastures; and in most parts is plenty of wood, except towards the centre of the island, where the inhabitants generally use turf for fuel. The fields are separated by mud-walls; the cottages are of brick or white-washed: sand-hills are sometimes destructive on the coast; and the best protection from their ravages, says Catteau, is the elymus anemaria. Copenhagen is the capital. N. lat. 55° 2′ to 56° 6′. E. long. 10° 58′ to 12° 40′. See DENMARK.

ZEALAND, *State of*, one of the former United Dutch States, and now part of the recently established kingdom. It consists of islands which are formed by those branches and outlets of the Scheldt, called Zeeuwsche Stromen, or Sea Streams; on the north it is bounded by Holland, eastward by Brabant, southward by Flanders, and westward by the North sea: its name sufficiently indicates its natural position and situation. The islands of Walcheren and Schouwen, on the western coast, are defended against the violence of the sea, by downs or sand-hills, and on the other sides, like the rest of the islands of Zealand, by vast dykes, which, at the bottom, have a breadth of 25 German ells, and at the top are so wide, that two carriages may pass abreast: the height is also proportioned to their thickness; notwithstanding which, in high tides and stormy weather, the waves in many places force a passage, or even flow over them: the first formation of these dykes must have been attended with immense expence, the very repair and maintenance of them requiring large sums. Emanuel van Meteren, in the sixteenth book of his Commentaries, says, and confirms it by the attestations of the workmen employed in them, that the dykes in this province alone, if placed in one direction, would form a length of 40 miles, each mile to be reckoned at 1400 rods, and that the expence of one rod with another was a pound Flemish, or six Dutch guilders. Thus the charge of the outward dykes taken together amounts to 340,000*l*. sterling. Though the inhabitants of the other provinces, and foreigners in general, complain of the air being heavy, disagreeable, and unhealthy, yet no people look better, or enjoy a more confirmed state of health, than the natives who are born and bred up in it. The soil too is very fruitful, and famed for its excellent wheat, as likewise for madder, the cultivation of which furnishes out great employment for the inhabitants of Zealand: it abounds also in good fruits, and its rich pastures are covered with flocks of fine sheep. The waters around the islands supply them with plenty of fish, particularly with oysters, lobsters, and muscles, of an uncommon size and goodness. Zealand enjoys likewise an affluence of all kinds of provisions, but fuel is very scarce there, especially turf, which, being brought from other provinces, bears a high price; great quantities of English coals are used here. In the whole province are 121 towns and villages, some of which are very large. The inhabitants are reckoned the most wealthy in all the Netherlands, which is, in a great measure, owing to their traffic by sea, and for this, indeed, they have every conveniency that can be desired. (See HOLLAND.) The right bank of the Scheldt, called the East Scheldt, divides this province into two quarters, *viz.* into that on the east and that on the west of the said river. The quarter on the West Scheldt is composed of five islands, *viz.* Walcheren, South Beveland, North Beveland, Wolfersdyk, and St. Joostland. The quarter of the East Scheldt contains four islands, *viz.* Schouwen, Duiveland, Tholen, and St. Philip's Land.

ZEALAND, *New*, two islands in the South Pacific ocean, first discovered by Tasman, a Dutch navigator. In the year 1642, he traversed the eastern coast from lat. 34° to 43°, and entered the strait called Cook's Strait; he was attacked by the natives soon after he came to an anchor in the place, to which he gave the name of Murderer's Bay, and never went on shore: he gave the country the name of Staaten Land, in honour of the states-general, and it is now generally distinguished in our maps and charts by the name of New Zealand. As the whole of this country, except that part of the coast which was seen by Tasman from on board his ship, had from his time to the voyage of the Endeavour, in the year 1770, remained altogether unknown, it was by many supposed to be part of a southern continent. It is, however, now known to consist of two large islands, divided from each other by a strait or passage, which is about four or five leagues broad. The northernmost of these islands is called by the natives Eaheinomauwe; and the southernmost Tovy, or Tavai Poenammoo. The latter is the name of a lake, and signifies the water of green talc. This lake is situated in the northern part of the island, and the country adjoining it only is known to the natives under this name. From my observation, says captain Cook, and from other information, it appears to me, that the New Zealanders must live under perpetual apprehensions of being destroyed by each other; there being few of their tribes that have not, as they think, sustained wrongs from some other tribe, which they are continually upon the watch to revenge; and perhaps the desire of a good meal may be no small incitement. They will even preserve their enmity from father to son, fon, and the fon never lofes fight of an injury done to his father. The method of executing their horrible defigns is by ftealing upon their enemies in the night; and if they find them unguarded, (which however is but feldom the cafe,) they kill every one indifcriminately, not even fparing the women and children: the dead bodies they either devour on the fpot, or carry them home for that purpofe. If they are difcovered before they can execute their bloody purpofe, they generally fteal off; and fometimes are purfued and attacked by the other party in their turn. They never give quarter, or take prifoners. This perpetual ftate of warfare renders them fo circumfpect, that they are never off their guard either by night or day. According to their fyftem of belief, the foul of the man whofe flefh is devoured by the enemy is doomed to perpetual fire; while the foul of him whofe body has been refcued, as well as thofe who die a natural death, afcend to the habitation of the gods. They do not eat the bodies of their friends who have been refcued. Their common method of difpofing of the dead is by burying in the earth; but if they have more of their flaughtered enemies than they can eat, they throw them into the fea. They have no fuch things as morais, or other places of public worfhip; nor do they ever affemble together with this view. But they have priefts who alone addrefs the gods in prayers for the profperity of their temporal affairs. Whatever the principles of their religion may be, they are ftrongly inculcated from their infancy: of this I had a remarkable inftance in the youth who was firft deftined to accompany Taweiharooa. He refrained from eating the greateft part of the day on account of his hair being cut; though every method was tried to induce him to break his refolution; and he was tempted with the offer of fuch victuals as he was known to like beft. He faid, that if he ate any thing that day, the Eatooa would kill him: however, towards evening the cravings of nature got the better of the precepts of religion, and he ate, though but fparingly. Notwithftanding the divided and hoftile ftate in which the New Zealanders live, travelling ftrangers who come with no ill defign are well received, and entertained during their ftay; which, however, it is expected will be no longer than is requifite to tranfact the bufinefs that they come upon. Polygamy is allowed amongft the people: the women are marriageable at a very early age; and one who is unmarried is but in a forlorn ftate: fhe can with difficulty get a fubfiftence, and is in a great meafure without a protector, though in continual want of a powerful one. The New Zealanders feem to be perfectly fatisfied with the little knowledge they are mafters of without attempting in the leaft to improve it; nor are they remarkably curious either in their obfervations or inquiries. Tovy Poenammoo is for the moft part a mountainous, and to all appearances a barren country, and thinly peopled. Eaheinomauwe has a much better appearance; it is indeed not only hilly, but mountainous, yet even the hills and mountains are covered with wood, and every valley has a rivulet of water; the foil in thefe valleys and in the plains, of which there are many that are not overgrown with wood, is in general light, but fertile, and fit for every kind of European grain, plants, and fruit. From the vegetables that were found here, there is reafon to conclude the winters are milder than in England, and the fummer not hotter, though it was more equally warm: dogs and rats are the only quadrupeds that were feen, and of the latter only a few. The inhabitants breed the dogs for the fole purpofe of eating them. There are feals and whales on the coaft, and a fea-lion was once feen. The birds are, hawks, owls, quails; and there are fong-birds, whofe note is wonderfully melodious. There are ducks and fhags of feveral forts, not unlike thofe of Europe; and the gannet, which is exactly the fame. The fea-coaft is vifited by albatroffes, fheer-waters, pintados, and penguins. The infects are, flefh-flies, beetles, butter-flies, fand-flies, and mufquitoes; and the neighbouring fea abounds with fifh, which are equally delicious and wholefome food. Captain Cook feldom came to anchor but they caught enough, with hook and line only, to fupply the whole fhip's crew; and when they fifhed with nets, every mefs in the fhip, except thofe who were too indolent, falted as much as fupplied them when at fea fome time after. The fifh was not lefs various in kind than plentiful in quantity; there were many forts they had never before feen, but the failors readily gave names to all of them. The higheft luxury which the fea afforded was the lobfter, or fea cray-fifh. Here were alfo feveral fpecies of the fkate, or ftingray: foles, flounders, and fhell-fifh, were abundant. This country abounds with forefts filled with very large, ftraight, and clean timber. There is one tree about the fize of an oak, which was diftinguifhed by a fcarlet flower, that appeared to be compofed of feveral fibres; the wood of which was hard and heavy, excellently adapted to the ufe of the mill-wright: and another which grows in fwampy ground, very ftraight and tall, bearing fmall bunches of berries, and a leaf refembling that of a yew-tree; the wood of which is very tough, and thick enough to make mafts of any fize: about 400 fpecies of plants were found, all of which are unknown in England, except garden night-fhade, fow-thiftle, two or three kinds of fern, and one or two forts of grafs. They found wild celery, and a kind of creffes, in great abundance on the fea fhore, and of eatable plants raifed by cultivation, only cocoas, yams, and fweet potatoes. There are plantations of many acres of thefe yams and potatoes. The inhabitants likewife cultivate the ground; and the Chinefe paper mulberry-tree is to be found, but in no abundance. There is only one fhrub or tree in this country which produces fruit, and that is a kind of a berry almoft taftelefs; but they have a plant which anfwers all the ufes of hemp and flax. There are two kinds of this plant, the leaves of one of which are yellow, and the other deep-red, and both of them refemble the leaves of flags; of thefe leaves they make lines and cordage, and much ftronger than any thing of the kind in Europe. Thefe leaves they likewife fplit into breadths, and tying the flips together form their fifhing-nets. Their common apparel by a fimple procefs is made from leaves, and their finer by another preparation is made from the fibres. This plant is found both on high and low ground, in dry mould, and deep bogs; but as it grows largeft in the latter, that feems to be its proper foil.

The men of this country are as large as the largeft Europeans. Their complexion is brown, but little more fo than that of a Spaniard. They are full of flefh, but not lazy or luxurious, and are ftout and well fhaped. The women poffefs not that delicacy which diftinguifhes the European ladies, but their voice is fingularly foft, which, as the drefs of both fexes is fimilar, chiefly diftinguifhes them from the men. The men are active in a high degree; their hair is black, and teeth are white and even. The features in both fexes are regular; they enjoy perfect health, and live to a very advanced age; they are of the gentleft difpofitions, and treat each other with the utmoft kindnefs, but they are perpetually at war, every little diftrict being at enmity with all the reft, and towards their enemies they are implacable, never giving quarter. They have neither black cattle, fheep, hogs, nor goats; fo that their chief food being fifh, and that not at all times to be obtained, they are in in danger of dying through hunger: they have a few, and but a very few dogs; and when no fish is to be got they have only vegetables such as fern-root, clams, yams, and potatoes to feed on; and if by any accident these fail them, their situation must be deplorable. This will account for their shocking custom of eating the bodies which are slain in battle, for he who fights through mere hunger will not scruple to eat the adversary he has killed. The inhabitants of New Zealand are modest and reserved in their behaviour and conversation. The women, indeed, were not dead to the softer impressions; but their mode of consent was, in their idea, as harmless as the consent to marriage with us, and equally binding for the stipulated time. If any of the English addressed one of their women, he was informed, that the consent of her friends must be obtained, which usually followed on his making a present. This done, he was obliged to treat his temporary wife at least as delicately as we do in England. They anoint their hair with oil, melted from the fat of fish or birds. The poorer people use that which is rancid, so that their smell is very disagreeable: but those of superior rank make use of that which is fresh. They wear combs, both of bone and wood, which are considered as an ornament when stuck upright in the hair. The men tie their hair in a bunch on the crown of their head, and adorn it with the feathers of birds, which they likewise sometimes place on each side of the temples. They commonly wear short beards; the hair of the women sometimes flows over the shoulders, and sometimes is cut short. Both sexes, but the men more than the women, mark their bodies with black stains called *Amoco;* in general the women stain only the lips, but sometimes mark other parts with black patches; the men, on the contrary, put on additional marks from year to year, so that those who are very ancient are almost covered. Exclusive of the Amoco, they mark themselves with furrows: these furrows make a hideous appearance, the edges being indented, and the whole quite black. The ornaments of the face are drawn in the spiral form, with equal elegance and correctness, both cheeks being marked exactly alike, while the painting on their bodies resembles fillagree work, and the foliage in old chased ornaments, but no two faces or bodies are painted exactly after the same model. These Indians likewise paint their bodies, by rubbing them with red ochre, either dry, or mixed with oil. Their dress is formed of the leaves of the flag, split into slips, which are interwoven, and made into a kind of matting, the ends which are seven or eight inches in length hanging out on the upper side. One piece of this matting, being tied over the shoulders, reaches to the knees; the other piece, being wrapped round the waist, falls almost to the ground. These two pieces are fastened to a string, which, by means of a bodkin of bone, is passed through, and tacks them together. The men wear the lower garment only at particular times. What they consider as the most ornamental part of their dress is the fur of dogs, which they cut into stripes, and sew on different parts of their apparel. As dogs are not in plenty, they dispose these stripes with great economy. They have a few dresses ornamented with feathers; and one man was seen covered wholly with the red feathers of the parrot. The women never tie their hair on the top of their head, nor adorn it with feathers; and are less anxious about dress than the men. Their lower garment is bound tight round them, except when they go a-fishing, and then they are careful that the men shall not see them. The ears of both sexes are bored, and the holes stretched so as to admit a man's finger. The ornaments of their ears are, feathers, cloth, bones, and sometimes bits of wood: a great many of them use nails, which were given them by the English for this purpose; and the women sometimes adorn their ears with the white down of the albatross, which they spread before and behind the hole, in a large bunch. They likewise hang to their ears by strings, chisels, bodkins, the teeth of dogs, and the teeth and nails of their deceased friends. The arms and ancles of the women are adorned with shells and bones, or any thing else through which they can pass a string. The men wear a piece of green talc, or whalebone, with the resemblance of a man carved on it, hanging to a string round the neck.

The houses are from sixteen to twenty-four feet long, ten or twelve wide, and six or eight in height. The frame is of slight sticks of wood, and the walls and roof are made of dry grass, pretty firmly compacted. Some of them are lined with bark of trees, and the ridge of the house is formed by a pole, which runs from one end to the other. The door is only high enough to admit a person crawling on hands and knees; and the roof is sloping. There is a square hole near the door, serving both for window and chimney, near which is the fire-place. A plank is placed near the door, adorned with a sort of carving, and this they consider as an ornamental piece of furniture. The side walls, and roof, projecting two or three feet beyond the walls at each end, form a sort of portico, where benches are placed to sit on. The fire is made in the middle of a hollow square in the floor, which is inclosed with wood or stone. They sleep near the walls, where the ground is covered with straw for their beds. Besides the fern-root, which serves them for bread, they feed on albatrosses, penguins, and some other birds. Whatever they eat is either roasted or baked, as they have no vessels in which water can be boiled. No plantations of cocoas, potatoes, and yams, were seen to the southward, though there were many in the northern parts. The natives drink no other liquor than water, and enjoy perfect and uninterrupted health. When wounded in battle, the wound heals in a very short time, without the application of medicine; and the very old people carry no other marks of decay about them than the loss of their hair and teeth, and a failure of their muscular strength, but enjoy an equal share of health and cheerfulness with the youngest.

The canoes of this country are not unlike the whale-boats of New England, being long and narrow. Those of the larger sort seem to be built for war, and will hold from 30 to 100 men; one of these measured near seventy feet in length, six in width, and four in depth. It was sharp at the bottom, and consisted of three lengths, about two or three inches thick, and tied firmly together with strong plaiting: each side was formed of one entire plank, about twelve inches broad, and about an inch and a half thick, which were fitted to the bottom part with equal strength and ingenuity. Several thwarts were laid from one side to the other, to which they were securely fastened, in order to strengthen the canoes. These vessels are rowed with a kind of paddles, between five and six feet in length, the blade of which is a long oval, gradually decreasing till it reaches the handle; and the velocity with which they row with these paddles is surprising: their sails are composed of a kind of mat or netting, which is extended between two upright poles, one of which is fixed on each side. Two ropes fastened to the top of each pole serve instead of sheets. The vessels are steered by two men, having each a paddle, and sitting in the stern; but they can only sail before the wind, in which direction they move with considerable swiftness.

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These Indians use axes, adzes, and chisels, with which last they likewise bore holes. The chisels are made of jasper, or of the bone of a man's arm; and their axes and adzes of a hard black stone. Their tillage of the ground is excellent, owing to the necessity they are under of cultivating, or running the risk of starving. A long narrow stake, sharpened to an edge at bottom, with a piece fixed across, a little above it, for the convenience of driving it into the ground with the foot, supplies the place both of plough and spade. The soil being light, their work is not very laborious, and with this instrument alone they will turn up ground of six or seven acres in extent. Their fish-hooks are of shell or bone; and they have baskets of wicker-work to hold the fish. Their warlike weapons are, spears, darts, battle-axes, and the patoo-patoo, in which they chiefly confide. This is fastened to their wrists by a strong strap, lest it should be wrenched from them, and the principal people generally wear it sticking in their girdles, considering it as a military ornament and part of their dress, like the poinard of the Asiatic and the sword of the Europeans. The spear, which is pointed at each end, is about twenty-six feet in length, and they hold it in the middle, so that it is difficult to parry a push from it. Whether they fight in boats or on shore, the battle is hand to hand; their contests must be bloody. The war-dance consists of a great variety of violent motions and hideous contortions of the limbs, during which the countenance and tongue perform their parts. This horrid dance is always accompanied by a song, every strain of which terminates with a deep and loud sigh.

The employment of the men is supposed to consist in cultivating the ground, making nets, catching birds, and fishing; while the women are engaged in weaving cloth, procuring fern-roots and shell-fish, and dressing food. With regard to religion, they acknowledge one superior being, and several subordinate. Their mode of worship could not be learned, nor was any place proper for that purpose seen. There was indeed a small square area, encompassed with stones, in the middle of which hung a basket of fern-roots on one of their spades. This they said was offered to the gods, in the hope of a plentiful crop of provision. The inhabitants of the southern district said they disposed of their dead by throwing them into the sea; but those of the north said they buried them in the ground: captain Cook's crew, however, saw not the least sign of any grave, or monument; but the body of almost every inhabitant bore the marks of wounds which they had given themselves, in token of grief for the loss of their friends and relations. Some of these scars were newly made, which is a proof that their friends had died while the ship's crew were there, yet no one saw any thing like a funeral, as the islanders conceal every thing respecting the dead with the utmost caution. A great similitude was observed between the dress, furniture, boats, and nets of the New Zealanders, and those of the inhabitants of the South sea islands, which furnish a strong proof that the ancestors of both were natives of the same country. The language of New Zealand and Otaheite is radically the same; and that of the northern and southern parts differs chiefly in the pronunciation. S. lat 34° to 48°. W. long. 181° to 194°. Cook's Voyages by Hawksworth, vol. iii.

ZEAMAH, a river of Algiers, which runs into the Mediterranean, 6 miles S.S.E. of Cull.

ZEAN, a town of Hindoostan, in Dooab; 20 miles S. of Canoge.

ZEB, or Zib, a town of Syria, near the sea-coast, anciently called Achsaph, Achzib, and Ecdippa; 9 miles from Acre.

ZEBAIDE, a town of Persia, in the province of Farsistan; 80 miles E. of Schiras.

ZEBDAINEH, a village of Syria, built on the spot where it is said by some that Cain slew his brother Abel; 14 miles N.W. of Damascus.

ZEBE, or Zaab, in *Ancient Geography*, a town which once formed a part of Mauritania Sitifensis; it was situated at the foot of the chain of mount Atlas.

ZEBEE, in *Geography*, a river of Abyssinia, which runs into the Indian sea.

ZEBEER, a town of Arabian Irak; 12 miles W. of Bassorah.

ZEBEN. See Szeben.

ZEBET, a word used by some of the chemical writers to express dung.

ZEBID, in *Geography*, a city of Arabia, in the province of Yemen. Zebid was once the place of a sovereign's residence, and the most commercial city in all Tehama; but since the harbour of Ghalefka was choked up, its trade has been transferred to Beit el Fakih and Mocha, and this city now retains nothing but the shadow of its former splendour. Viewed from a distance, it appears to some advantage, by means of the mosques and kubbets, of which it is full. Several of those mosques were erected by different pachas, who resided here during the short period while this part of Arabia was in the possession of the Ottoman Porte. Zebid had once eight gates; of these only five are now standing, and the river is gradually breaking down a part of them. The walls of the old city are demolished, and the very ruins are sold by poor people, who gather out the stones, and sell them for building new houses. The present buildings occupy about one half of the ancient extent of the city. Zebid is still distinguished for an academy, or university, for the Sunais, as that of Damar is for the Seidites, in which the youth of Tehama, and a part of Yemen, study such sciences as are cultivated among the Mussulmen. This is besides the seat of a dola, a mufti, and three cadis; 52 miles N. of Mocha. N. lat. 14° 12′. E. long. 43° 15′.

ZEBIO, a mountain of Italy, which sometimes emits flames; 6 miles S. of Modena.

ZEBLICIUM Marmor, in *Natural History*, a name given by several authors to a soft green marble, variegated with black and white; and though the authors who have described it have not observed it, yet it no way differs from the white ophites of the ancients. See Ophites.

ZEBOIM, in *Ancient Geography*. See Seboim.

ZEBRA, in *Zoology*. See Equus *Zebra*.

ZEBU, a name given by M. de Buffon to a variety of the bos taurus of Linnæus, or bison of other writers, or the camel. This variety resembles the Indian ox, or bos Indicus, but is extremely small, being found in some parts of India of a size scarcely larger than a great dog. In colour it differs like the common cattle, being either grey, brown, white, &c., or variously spotted. The Indian ox, which is found in many parts of India, as well as in the Indian and African islands, and particularly in Madagascar, is of a reddish colour, of a very large size, and is distinguished by a very large protuberance over the shoulders.

Zebu, in *Geography*. See Sibu.

ZEBULUN, or Zabulon, in *Scripture Geography*, one of the Jewish tribes in Lower Galilee, on the S. of the tribes of Asher and Naphtali, having the Mediterranean on the W., the sea of Galilee on the E.; separated on the N. from Asher by the river Jepthael, and on the S. from Issa-

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char by that of Kishon. Its ports, on account of its vicinity to the sea, were numerous, and its commerce extensive. Its cities were, Zebulun the capital, Bethsaida, Magdalen, Joppa, Jotapa, Cinnereth, (since Tiberias, on the lake of that name,) Cartha, Bethulia, Rimmon, Dothaire, Damna, Sommerom, Tabor, both the city and mount, Sopha, Saffa or Siporis, Nazareth, Cana the lesser, commonly called Cana of Galilee, Iconium, and Sicaminum or Porphyrem, anciently Hiepha, or Ceipha, situated northwards at the foot of mount Carmel.

ZEBULUN, or *Zabulon*, the capital of the fore-mentioned tribe, situated on the Mediterranean, near the mouth of the Jepthael, and once styled Zabulon Andron, or of men, on account of its extraordinary populousness. It was adorned with fine buildings, after the manner of Tyre, Sidon, and Berytus, and much admired on that account by Cestius, the Roman general, who nevertheless took, plundered, and burnt it to the ground. In the early ages of Christianity it was the see of a bishop, but now it is a poor place, in ruins.

ZECHARIAH, or the *Prophecy of Zechariah*, in *Biblical History*, a canonical book of the Old Testament.

Zechariah was contemporary with Haggai, and prophesied in the second year of Darius Hystaspes. The design of the first part of this prophecy is the same with that of Haggai, *viz.* to encourage the Jews to go on with rebuilding of the temple, by giving them assurance of God's assistance and protection: from whence the author proceeds to foretel the glory of the Christian church, the true temple of God, under its great high priest and governor, Jesus Christ, of whom Zerubbabel and Joshua the high priest were figures. The latter part of the prophecy, from chap. ix., probably relates to the state of the Jews under the Maccabees, and then foretels the rejection of the Messiah, and some remarkable incidents that should happen to them in the latter ages of the world.

Mr. Mede, and some other learned men, think, that the 9th and following chapters of Zechariah are parts of the prophecy of Jeremiah.

ZECHIN, or ZECCHINO, in *Commerce*. See SEQUIN.

ZECHINI, in *Geography*, a small island in the Grecian Archipelago; 2 miles S.E. of Stanchio. N. lat. 36° 48'. E. long. 26° 51'.

ZECHLIN, a town of Brandenburg, in the mark of Pregnitz; 9 miles E. of Witstock.

ZEDIC, a town of Africa, capital of a district in Tripoli, situated in a bay of the Mediterranean, called the bay of Zedic; 150 miles E.S.E. of Tripoli.

ZEDLISCHT, a town of Bohemia, in the circle of Pilsen; 5 miles N.W. of Hayd.

ZEDOARY, ZEDOARIA, or *Kæmpferia Rotunda* of Woodville, or *Curcuma Zerumbet* of Dr. Roxburgh, in the *Materia Medica*, a medicinal root, belonging to a plant growing in the East Indies (the *amomum scapo nudo, spica laxa truncata*, of Berg. Mat. Med.), whose leaves are like those of ginger, only longer and broader.

The *Curcuma Zedoaria* of Dr. Roxburgh, with small bulbs, and with the long palmate tubers inwardly yellow, leaves broad lanceolar, subsessile on their sheaths, sericeous underneath, and the whole plant green, is the AMOMUM *Zedoaria* of Linnæus and Willdenow; which see. It is a native of various parts of India; flowers during the hot season, April and May, when the plant is destitute of leaves: soon after they appear. The dry root, it is said, agrees pretty well with the drug known in England by the name of zedoaria rotunda. The Sanskrit name implies that the drug is used as an antidote to poison.

The *Curcuma Zerumbet* of Roxburgh, with small bulbs, and palmate tubers pale straw-colour; leaves green-petioled, broad-lanceolar, with a purple cloud down the middle; and flowers shorter than their bracteas, is the AMOMUM *Zerumbeth* of Retzius; which see. This is a native of various parts of India, and its flowering-time the hot season, before the leaves appear. The pale colour of the roots, crimson coma, and ferruginous mark down the centre of the leaves, which is a constant mark in this elegant species, readily point it out from every other. The dry root appears to be the zedoaria of the shops in England. See Asiatic Researches, vol. ii. p. 332—334.

The root is brought over in oblong pieces, about the thickness of the little finger, and two or three inches in length; or in roundish ones (the *zerumbeth* of the Paris Pharmacopœia), about an inch in diameter; it is of an ash colour on the outside, and white within. The difference of these, in strength, if any, is very inconsiderable, and therefore the college allows both to be used indiscriminately.

This root has an agreeable camphoraceous smell, and a bitterish aromatic taste. It impregnates water with its smell, a slight bitterness, a considerable warmth and pungency, and a yellowish-brown colour: the reddish-yellow spirituous tincture is in taste stronger, and in smell weaker, than the watery. In distillation with water, it yields a thick, ponderous essential oil, smelling strongly of the zedoary, in taste very hot and pungent: the decoction, thus deprived of the aromatic matter, and concentrated by inspissation, proves weakly and disagreeably bitter and subacrid. A part of its odorous matter rises also in the inspissation of the spirituous tincture; the remaining extract is a very warm, not fiery, moderately bitter aromatic, in flavour more grateful than the zedoary in substance.

Zedoary-root is a very useful warm stomachic; and has been commended in colics and hysteric affections, for promoting the menses, &c. It has been employed by some as a succedaneum to gentian root; but from the above analysis it appears to be not entirely similar to that simple bitter; its warm aromatic part being the prevailing principle, in virtue of which its spirituous extract (the most elegant preparation of it), has been made an ingredient in the cordial confection of the London Pharmacopœia. Lewis's Mat. Med.

Carthenser, who ascribes its virtues to a camphoraceous volatile oil, considers it as a general remedy for most of the chronic diseases with which human nature is affected; but as the camphor contained in it can avail but little, and its effects as a bitter or aromatic are so very inconsiderable, this root is now deemed to possess very little medicinal power, and might be safely expunged from the materia medica. Cullen. Woodville.

The zedoary wash, which is a cooler yellow than saffron, though full as bright, and valuable for many purposes in painting with water-colours, may be prepared by boiling an ounce of the root in a quart of water, till the water is sufficiently tinged to make a stain on paper, of a full yellow colour; and straining the liquor through a linen filtre. This wash may be dried in shells, and will again dissolve and spread kindly with the addition of water.

ZEEDLITZ, in *Geography*, a town of Silesia, in the principality of Neisse; 3 miles N. of Ottmuchau.

ZEFERDEN. See SUFFERDAM.

ZEFR, a word by which some of the chemical authors express pitch.

ZEFRIO, in *Geography*, a mountain of Naples, in Calabria Ultra; 10 miles N.N.E. of Bova.

ZEGEDIN, or SZEGED, a town of Hungary, near the conflux of the rivers Maros and Theisse. It is strong, and a place a place of ſome trade, particularly in cattle. In the year 1503, all its defence was a moat and rampart; but falling ſome time after into the hands of the Turks, they erected a brick fort. In 1686, the Imperialiſts diſpoſſeſſed the Turks of it; 68 miles N. of Belgrade. N. lat. 46° 15′. E. long. 19° 56′.

ZEGGO, a town of Africa, in the country of Melli, in the road from Kong to Caſhna; 100 miles N.N.W. of Malel. N. lat. 14°. E. long. 8°.

ZEGHAMA, a town of Dar-Fur; 60 miles N. of Cobbé.

ZEGHEN, a town of Fezzan; 65 miles N. of Mourzouk.

ZEGI, Zagi, a word uſed by Avicenna and others to expreſs all the ſeveral vitriolic minerals. See Chalcitis, and Colcothar.

ZEGMA, in *Geography*, a town of Aſiatic Turkey, in the province of Diarbekir, on the Euphrates, oppoſite to Romkala.

ZEGUTI, a town of Imiretia; 20 miles S.W. of Cotatis.

ZEGZEG, a city of Africa, and capital of a country of the ſame name, ſituated to the eaſt of Agades; 370 miles N.N.E. of Caſhna. N. lat. 20° 45′. E. long. 16°.

ZEHDENICK, a town of Brandenburg, in the Ucker Mark, on the Havel. In it is a convent for ladies of noble deſcent, conſiſting of a domina and ſix ſiſters. It carries on a large trade in wood and corn: in the paſtures, near the town, iron-ore is met with in great abundance, and accordingly there is a mill here for that purpoſe, which is driven by the Havel. At this place likewiſe is a foundery, where bombs, grenadoes, bullets, mortars, pots, weights, and even ſmall cannon are caſt; 28 miles S.S.W. of Prenzlow. N. lat. 52° 58′. E. long. 13° 22′.

ZEHDIN, a town of Brandenburg, in the New Mark; 40 miles E. of Oderberg.

ZEHERECH, a word uſed by ſome of the chemical writers to expreſs flowers of braſs.

ZEHISTA, in *Geography*, a town of Saxony, in the margravate of Meiſſen; 3 miles S. of Pirna.

ZEHRENDORF, a town of Brandenburg, in the Middle Mark; 3 miles S. of Zoſſen.

ZEIDOURE, a diſtrict of Algiers, between Tremecen and Oran.

ZEIL, a town of Bavaria, in the biſhopric of Bamberg; 12 miles W.N.W. of Bamberg. N. lat. 50° 1′. E. long. 10° 40′.—Alſo, a town and caſtle of Germany, which gives name to a county; 4 miles N. of Leutkirch.

ZEILA, or Zella, or *Sejla*, a ſea-port town of Africa, in the kingdom of Adel, ſituated on the coaſt of the Arabian ſea, at the mouth of the Hanazo, or Hawaſh, which forms a bay, called the Bay or Gulf of Zeila. It receives a governor from the dola of Mocha. N. lat. 10° 45′. E. long. 44° 20′.

ZEILSHEIM, a town of the duchy of Wurzburg; 4 miles N. of Volckach.—Alſo, a town of the duchy of Wurzburg; 4 miles E.N.E. of Arnſtein.

ZEINDEROOD, or Zenderoud, a river of Perſia, in the province of Irak, which has its ſource in the Kohi-zard, or Yellow mountain, where an aqueduct may yet be ſeen, by which Abbas the Great attempted to unite its waters with thoſe of the Karoon. The Zeinderood paſſes through the city of Iſpahan, and is ſaid to be abſorbed in the irrigation of the neighbouring territory, or to loſe itſelf in a lake, 15 miles S.W. of Lauriſtan. On this river are three bridges, two of which are in good repair; particularly that of the Char Baug (four gardens), ſo called from its connecting the upper and lower Chaur Baug, the name given to a ſpacious avenue, which runs from the royal ſquare to the foot of the mountains E. of Iſpahan.

ZEISELMAN, a town of Auſtria; 3 miles E. of Tulln.

ZEISPERG, a town of Auſtria; 3 miles E.N.E. of Crems.

ZEITHAYN, a town of Saxony, in the margravate of Meiſſen, famous for a pleaſure-camp which king Auguſtus II. made there, in 1730, at the expence of five millions of rix-dollars. On the ſpot which was uſed for this camp, and the exerciſing of the army, are erected ſix large pyramids; and medals have likewiſe been ſtruck upon it, and a grand repreſentation thereof engraved on copper; 8 miles W.N.W. of Groſſenhayn.

ZEITLOSS, a town of the duchy of Wurzburg, on the river Sinn; 10 miles N. of Gmunden.

ZEITON, a town of European Turkey, in Theſſaly, on a gulf to which it gives name. Here are about 400 Chriſtian families, but the greater part of the inhabitants conſiſts of Turks; 48 miles S.S.E. of Lariſſa. N. lat. 39° 6′. E. long. 22° 58′.

Zeiton, a gulf or bay of the Egæan ſea, on the E. coaſt of Theſſaly, N.W. of the iſland of Negroponte.

ZEITOON, a town of Perſia, in the province of Fars or Farſiſtan, containing about 2000 inhabitants, and ſituated in a pleaſant valley, fertilized by both the branches of the river Tab, which here form a junction. Zeitoon is about fifteen miles diſtant from Behaban, the capital of the mountainous diſtrict of Khogilſea, which extends from the valley of Ram Hormuz to the vicinity of Kazeroon.

ZEITOUN, a town of Aſiatic Turkey, in the government of Sivas, on the Kizilermak; 33 miles W. of Samſoun.

ZEITRABRA, a term uſed by ſome of the chemiſts to expreſs any thing that is fluxile.

ZEITZ, in *Geography*, a town of Saxony, in the biſhopric of Naumburg, anciently the ſee of a biſhop, founded by the emperor Otho I. afterwards transferred to Naumburg, after this town had been ſacked and almoſt deſtroyed by the Vandals in the year 982; 15 miles E.S.E. of Naumburg. N. lat. 51° 3′. E. long. 12° 2′.

ZEKELHEIB, a town of Hungary; 8 miles N.N.W. of St. Job.

ZELA, a town of Perſia, in the province of Segeſtan; 25 miles S.W. of Ferah.

Zela, Ziela, or *Zeleja*, in *Ancient Geography*, a town of Thrace, afterwards called Flaviopolis.—Alſo, a town of Aſia, in Cappadocia Pontus, near the Lycus. It was celebrated by the defeat of Triarius, the Roman general, and afterwards by that of Pharnaces. Here was a famous temple, repreſented upon ſome medals, conſecrated to the goddeſs Anaitis, a Perſian divinity, whoſe pontiff was very powerful under ancient kings; but in proceſs of time his authority and revenues were diminiſhed. The town and the miniſters of the temple were dependent on Pithodiris, who poſſeſſed a part of the territory; other parts were ceded to the pontiffs of Zela and Comanes, and the reſt was annexed to the Roman province. According to Strabo, Zela and its territory were ſituated to the left of the river; the ſacred lands of the temple, and the domains of the pontiff, were in the environs of the town. He adds that it was fortified and built in the retrenchment of Semiramis; and in the firſt times it had only ſome houſes near the temple; but Pompey made it a town.

ZELAH, or Sela, a city of Benjamin (Joſh. xviii. 28.), where Saul was buried in the tomb of his father, Kiſh. 2 Sam. xxi. 14.

ZELAN, in *Geography*, a mountain in the county of Tyrol; 20 miles N.E. of Trent.

ZELANDY, a small island in the East Indian sea, near the W. coast of Sumatra. N. lat. 0° 53′. E. long. 98° 14′.

ZELANICA, a cape on the N. coast of Nova Zembla. N. lat. 78°. E. long. 77° 24′.

ZELATE, a town of the country of Candahar; 30 miles N.E. of Candahar.

ZELEBI. See SCHELEBY.

ZELEEFA, a town of Africa, in the country of Tunis; 10 miles S.E. of Cairoan.

ZELEH, a town of Asiatic Turkey, in the government of Sivas, anciently a town of Pontus, and called Zela. Near this place the Romans, under Triarius, were defeated by Mithridates; and Pharnaces, son of Mithridates, was afterwards defeated by Julius Cæsar; 21 miles W.S.W. of Tocat. See ZELA.

ZELEIA, in *Ancient Geography*, a town built, according to Homer, at the foot of mount Ida. It was watered by the Tarsius, and had to the S. the lake Aphnitis. According to Strabo, it had also in ancient times an oracle, but in his time it was not consulted.

ZELEM, in the *Materia Medica of the Ancients*, a name given by Avicenna and others to a fruit common in Africa in their time, and much esteemed by the people of that country, and called there by some *piper nigrorum*, the black people's pepper, or negro-pepper.

Avicenna tells us, that the zelem was a fattish seed, of the size of a chich, and of a high flavour, in colour yellow on the outside, and white within, and that it was brought from Barbary.

He adds, that there was another plant, properly called *fulful alsuaden*, that is, *piper nigrorum*. This, he says, was a seed contained in pods like kidney-beans, and was black, and of a pungent and acrid taste.

ZELENIN, in *Geography*, a small island in the Frozen ocean, near the S.W. coast of Nova Zembla. N. lat. 70° 50′. E. long. 56° 24′.

ZELENOIKOLOK, a fort of Russia, in the government of Caucasus, on the Ural; 44 miles N. of Guriev.

ZELES, in *Ancient Geography*, a town of Hispania, in Bœtica, upon a strait which separated Hispania from Africa, according to Strabo. This author reports, that the Romans transported the inhabitants into Mauritania, together with others drawn away from Tingis, established the town of Julia Joga.

ZELETAWA, in *Geography*. See SCHELETA.

ZELEZENSKAIA, a fort of Russia, in the government of Kolivan, on the E. side of the Irtisch. N. lat. 53° 25′. E. long. 75° 40′.

ZELITO, or ZILITO, a fort of South America, in the harbour of Carthagena.

ZELL, a town of Austria; 14 miles N.N.W. of St. Wolfgang.—Also, a town of Bavaria, in the bishopric of Bamberg; 10 miles W. of Bamberg.—Also, a town of Germany, in the principality of Culmbach; 12 miles S.S.W. of Hof.—Also, a town of the duchy of Wurzburg; 3 miles N. of Schweinfurt.

ZELL. See LIEBENZELL.

ZELL *im Ham*, a town of Germany, on the Moselle; 25 miles N.E. of Treves. N. lat. 50° 4′. E. long. 7° 7′.

ZELL *in the Pizgau*, a town of the archbishopric of Salzburg, on the Zeller See; 30 miles S.S.W. of Salzburg.

ZELL *in Zillerthal*, a town of the archbishopric of Salzburg, on the Ziller; 50 miles S.W. of Salzburg.

ZELL *am Hammersbach*, a town of Germany, situated in the vale of Hammersbach. The town was imperial, and assessed twenty-one florins till 1802, when it was given to the margrave of Baden; 9 miles W. of Freudenstadt. N. lat. 48° 23′. E. long. 8° 7′.

ZELLA, in *Ancient Geography*, a town of Africa, which was ruined during the war of Cæsar against Scipio. Strabo.

ZELLANG, in *Geography*, a town on the W. coast of the island of Celebes. S. lat. 4° 20′. E. long. 120° 3′.

ZELLE, or ALTENZELLE, a town of Saxony, in the circle of Erzgebirg; 2 miles W. of Nossen.

ZELLE, a city of Westphalia, in the principality of Luneburg. This is a fortified and well-built town, situated on the Aller, which is here navigable, and behind the New Town is joined by the Fuhsee. The town itself, in conjunction with the suburb of Fritzenweise, consists of 564 houses; but including the other suburbs, summer-houses, and buildings without the gates, the number of them amounts to about 1400. At this place was held the high court of appeals for the several territories of the electoral house of Brunswick-Luneburg, together with the chancery and chief tribunal of the principality of Luneburg. Here also stands the provincial house for the diets of the principality, together with one of its superintendencies, and a special superintendency which is administered by the general superintendant, who is always first minister of the town church. The other public edifices in it are, the Guildhall, the riding-house, the mews, and the armoury. The magistracy is possessed of the lower jurisdiction in the town, and likewise in some parts of the suburbs. At this place, too, are manufacturers and artificers in various branches, particularly in gold and silver. The prince's seat, near the town, is walled and moated in, and was the residence of the Zelle line of Brunswick-Luneburg, which failed in 1705. It was built by duke Henry, in the year 1485, and afterwards improved; 40 miles S. of Luneburg. N. lat. 53° 42′. E. long. 10° 14′.

ZELLENBERG, a town of France, in the department of the Upper Rhine; 9 miles N. of Colmar.

ZELLER SEE, a lake of Germany, in the archbishopric of Salzburg; 28 miles S.S.W. of Salzburg.

ZELLERFELD, a town of Westphalia, in the Harz Forest; silver to the value of 20,000 imperial crowns is annually coined in this town; 6 miles S.S.W. of Goslar.

ZELLERNDORFF, a town of Austria; 3 miles S.E. of Schrattentaal.

ZELLHOFEN, a town of Austria; 10 miles N.W. of Grein.

ZELLIA, in *Ancient Geography*, a country of Upper Pannonia, inhabited by the Slavi.

ZELLIN, in *Geography*, a town of the New Mark of Brandenburg; 13 miles N.W. of Custrin.

ZELLINGEN, a town of the duchy of Wurzburg; 8 miles N. of Wurzburg.

ZELLITZ, a town of the duchy of Stiria; 8 miles W. of Marburg.

ZELON, a town of Thibet; 27 miles S.W. of Lassa.

ZELOTTI, BATTISTA, in *Biography*, was born at Verona in 1532. He was a pupil of Titian, according to Vasari, and a fellow-student with Paolo Veronese, with whom he co-operated in several important works at Venice. He particularly excelled in fresco, and that induced Paolo to court his assistance in many of the great works in which he was engaged. In consequence many of his works are given to Veronese, and those in the hall of the Council of Ten, in the palazzo S. Marco, have been engraved by Le Febre as the works of that master. His picture of the Holy Family, in the Carara collection, is painted with the strength and warmth of Titian, and others of his works in

oil

oil are deservedly esteemed and admired, particularly the Conversion of S. Paul, and Christ with his Disciples in the Fishing-boat, in the cathedral at Vicenza. He fell short of the grace and taste of Veronese, yet his invention was not lacking in energy; his touch is free and animated, and his compositions managed with skill and judgment. He died in 1592, aged 60.

ZELPHI. See ZENDA.

ZELPITSCH, in *Geography*, a town of Istria; 10 miles N.E. of Mitterburg.

ZELTURINSKOI, a fort of Russia, in the government of Irkutsk; 72 miles S.S.E. of Tunginskoi.

ZELUIA, a town of Lithuania, in the palatinate of Novogrodek; 25 miles N.W. of Slonim.

ZEM, a river of Albania, which runs into the Moraca, 12 miles W. of Cattaro.

ZEMA, a word used by many of the old writers for a decoction or apozem.

ZEMARAIM, or SEMARAIM, in *Ancient Geography*, a city of Benjamin near Bethel. Josh. xviii. 22.

ZEMARITES, an ancient people of Syria, mentioned by Strabo, who places them on a plain, two leagues to the N. of mount Libanus, and gives them the term of Simyra.

ZEMASARUM, a word used by some of the chemical writers as a name for cinnabar.

ZEMBLA, NOVA, *Novaya Zemlia*, or *New Land*, in *Geography*, a Russian island, or rather a group of five islands, with the intervening channels always filled with ice, situated in the Frozen or Northern ocean. Of the numerous islands in this ocean, Novaya Zemlia and Kalgeva are the most considerable; but both are uninhabited, and frequented only by fishermen and hunters. The former is indeed well supplied with water; but is rocky, unfertile, and destitute of wood, furnishing vegetation only for a few stunted bushes and polar plants. It abounds, however, with rein-deer, white bears, white and blue foxes; and the shores swarm with morses, walruses, and various kinds of fish. Its magnitude is estimated at 950 versts in length, 520 in breadth, and 3090 in circumference, without following the sinuosities, and 425,509 German miles of superficies, according to Mr. Storch. On the northern side it is entirely encompassed with ice mountains; and to the south is the sea of Cara, Kara, or Karskoge, in which the tide flows about two feet nine inches. Among the lakes of this island there is one of salt water. From the middle of October till February the sun is not at all visible; but they have the advantage of numerous and strong north-lights and of much moon-light. In summer they have no thunder-storms. The snow falls in many places to the depth of four arshines. For two months, *viz.* June and July, the sun never sets. Between this island and the main land is the famous passage known by the name of Vaggat's or Waygat's straits.

ZEMECH, a word used by some writers as a name for *lapis lazuli*.

ZEMENIE, in *Geography*, a town of European Turkey, in Romania; 16 miles S.W. of Gallipoli.

ZEMIA, Ζημια, among the *Athenians*, is sometimes taken in a large and general sense for any kind of punishment; but more frequently for a pecuniary mulct or fine laid upon the criminal, according to the degree of his offence.

ZEMLIANSK, in *Geography*, a town of Russia, in the government of Voronez; 44 miles N.N.W. of Voronez. N. lat. 52° 12′. E. long. 38° 42′.

ZEMLIN, or SEMLIN, a fortress of Sclavonia, at the union of the Save and the Danube, opposite Belgrade. Here is a lazaretto, where travellers and merchandise from the Levant are detained to prevent infection. The number of inhabitants is about 1200 Rascians, Greeks, Jews, Armenians, and Turks: during a fire at Zemlin, Joseph II. emperor of Austria, assisted in person to suppress it.

ZEMME, a town of Grand Bucharia, on the Gihon; 60 miles S. of Bucharia.

ZEMOKARTLI, a town of Turkish Armenia, in the government of Cars; 50 miles N. of Ardanoudji.

ZEMORGET, or ZERMOGETE, a small island in the Red sea, 30 miles from the coast of Egypt. This island was called by the ancients "Ophiodes," from the abundance of serpents, and the island of topazes from the number of those precious stones found there. N. lat. 23° 25′. E. long. 53° 5′.

ZEMOVAH, a town of Pegu; 50 miles S. of Prone.

ZEMPHYRUS, in the *Materia Medica of the Ancients*, a name give to a precious stone, the fragments of which they use as a cordial and sudorific.

It appears by their accounts, that this stone was blue; and hence many have too hastily judged, that it was the lapis lazuli; but in truth it was the sapphire.

The word *zemphyrus* is no where used but in the writings of the later Greeks, and it is plainly formed, as most of their names of things are, on the Arabian word expressing the same thing. This Arabian word is *semphir*; and this, in Avicenna and Serapio, is always used as the name of a sapphire, never as that of any other gem. We find also by their accounts, that this sapphire was not the sapphire of the ancient Greeks, but the fine blue pellucid gem we now know by that name; for the sapphire of Theophrastus, and the other old writers, was only a kind of lapis lazuli.

ZEMPLIN, in *Geography*, a town of Hungary; 16 miles N.E. of Patak.

ZEMPOALA. See ZAMPALA.

ZEMZEM, the holy well of *Mecca*, which see.

ZENANICH. See SELANIEH.

ZENATI, a river of Algiers, formed by the union of two streams, which soon after changes its name to Seibouse.

ZENDA, a general term coined by Paracelsus, by which he and his followers express extraneous or equivocal generation, or the production of bodies without a seminal principle. The word *zerunda* is used to express this particular sort of generation of men, and *zelphi* in regard to other animals.

ZENDAVESTA, by contraction *Zend*, and, as it is vulgarly pronounced, *Zundavestow* and *Zund*, in *Antiquity*, denotes the book ascribed to ZOROASTER, (see his article,) and containing his pretended revelations; and which the ancient Magians and modern Persees, called also Gaurs, observe and reverence in the same manner as the Christians do the Bible, and the Mahometans the Koran, making it the sole rule of both their faith and manners. See MAGI, PERSEES, GEBRES, &c. See also GENTOOS.

The word, it is said, originally signifies any instrument for kindling fire, and is applied to this book to denote its aptitude for kindling the flame of religion in the hearts of those who read it.

Zendavesta is compounded of *Zend*, denoting the letters of the book, and *Avesta*, signifying the language in which it was written. See PERSIA, *Language of*.

M. Anquetil du Perron, to whose account we shall refer more at large in the sequel of this article, has taken pains, in the 37th volume of the work cited below, to prove that Zoroaster lived under Hystaspes, the father of Darius, in the sixth century before Christ.

The Zendavesta, or Zend, contains the system of doctrine and duty, which is said to have been supernaturally communicated

municated to Zoroaſter, and which his followers hold in very extraordinary veneration. A copy of this book is kept, ſays Dr. Prideaux, to this day in every oratory and fire-temple, and portions of it are read at ſtated times by the prieſts to the people: and to this they appeal as the ſtandard of the good and evil of their actions. This work, aſcribed among other numerous writings to Zerduſht, or the Perſian Zoroaſter, and eſteemed by his followers as of ſacred authority, is ſaid to have been written in the Perſian language, and to have conſiſted of two parts; one of which contains their forms of devotion and order of ceremonies, the other the precepts of religion and morality. A compendium of it, called the Sadda or Sadder, is read to the people on every ſacred day by their prieſts. There is, however, much reaſon to queſtion, whether this book be of ſuch ancient date as the time of Zoroaſter; and it has been ſuggeſted as probable, that it was written about the time when many Jews and Chriſtians reſided among the Perſians; that is, about the 4th or 5th century. In proof of its being later than the time of Zoroaſter, but written ſince the days of Mahomet, it is alleged, that the word *ſhaitam* occurs in it, which is peculiar to the Arabs; for in other oriental languages it is written *ſatam*, or *ſaton*.

Dr. Hyde gives us the following account of it. The Zend is the general name of the book, which is alſo called the book of Abraham; and it conſiſts of twenty-one or twenty-two ſeparate parts, with diſtinct names. Its contents were originally written on twelve hundred ſkins; and the ancient copies of it, like the original, are in the pure old Perſian language; but the later copies are in the ſame language, mixed with modern Perſic or Arabic words, ſerving to explain ſuch as were becoming obſolete. Some parts of the Zend contain the original text, and others contain Zerduſht's ſecond thoughts ſubjoined, for more fully explaining his doctrine. Some writers ſuggeſt, that Zerduſht firſt intended to compriſe his book in four parts, *viz.* the *Zend*, containing the liturgy and chief doctrine of his religion, and the *Pazend*, or commentary upon the former; and that the farther additions were occaſioned by the oppoſition of adverſaries, and unforeſeen circumſtances that occurred. The character in which the Zend is written is that of the old Perſian, called Pehlavi; and the Pazend character differs in a ſmall degree from this.

Dr. Hyde has given a catalogue of the ſeveral parts of the Zend, each of which is called *noſh* or *nuſh*.

In proceſs of time, when the old Perſian language became antiquated, and little underſtood, one of their deſtours or biſhops (about A.D. 1500) compoſed the *Sadda*, which is a compendium, in the vulgar or modern Perſic tongue, of thoſe parts of the Zend that relate to religion, or a kind of code of canons and precepts, drawn from the theological writings of Zoroaſter, ſerving as an authoritative rule of faith and practice for his followers. This Sadda is written in a low kind of Perſic verſe, and, as Dr. Hyde informs us, it is *bonorum et malorum farrago*, having many good and pious things, and others very ſuperſtitious and trifling.

The Zend contains a reformed ſyſtem of Magianiſm; teaching that there is a Supreme Being, eternal, ſelf-exiſtent, and independent, who created both light and darkneſs, out of which he made all other things; that theſe are in a ſtate of conflict, which will continue till the end of the world; that then there ſhall be a general reſurrection and judgment; and that juſt retribution ſhall be rendered unto men according to their works; and that the angel of darkneſs with his followers ſhall be conſigned to a ſtate of everlaſting darkneſs and puniſhment, and the angel of light with his diſciples introduced into a ſtate of everlaſting light and happineſs; after which light and darkneſs ſhall no more interfere with each other. The Zend alſo enjoins the conſtant maintenance of ſacred fires and fire-temples for religious worſhip, the diſtinction of clean and unclean beaſts, the payment of tithes to prieſts, which are to be of one family or tribe, a multitude of waſhings and purifications, reſembling thoſe of the Jewiſh law, and a variety of rules and exhortations for the exerciſe of benevolence and charity.

Dr. Prideaux charges the Zend with allowing the worſt kind of inceſt; and Dr. Hyde alſo intimates that it was allowed by Zoroaſter, till it was at length aboliſhed; but no authority has been cited to juſtify this charge.

The above-mentioned doctrines of the Zend are accommodated to the eaſtern taſte by a great intermixture of fable.

In this book there are many paſſages evidently taken out of the Scriptures of the Old Teſtament, particularly out of the Pſalms of David: the author repreſents Adam and Eve as the firſt parents of all mankind, gives in ſubſtance the ſame account of the Creation and Deluge with Moſes, differing indeed with regard to the former by converting the ſix days of the Moſaic account into ſix times, comprehending in the whole three hundred and ſixty-five days; and ſpeaks alſo of Abraham, Joſeph, Moſes, and Solomon. Moreover, Dr. Baumgarten (Univ. Hiſt. Suppl. vol. ii. p. 367, &c.) aſſerts, that this work contains doctrines, opinions, and facts, actually borrowed from the Jews, Chriſtians, and Mahometans; whence, and from other circumſtances, he concludes, that both the hiſtory and writings of this prophet were probably invented in the later ages, when the fire-worſhippers under the Mahometan government thought fit to vindicate their religion from the ſuſpicion of idolatry.

The Zoroaſter, ſays the abbé Foucher, (ſee ZOROASTER,) who was the author of the Zend, is repreſented by him as an apoſtate Jew, a ſubtle philoſopher, and an obſequious artful courtier, who inſinuated himſelf into the favour of Darius Hyſtaſpes; and he ſays that his great deſign was to reconcile the Hebrew with the Perſian religion by a mixture of the leading and eſſential doctrines of each, to revive the credit of the Magi, and to accommodate, by a proper colouring, the Jewiſh religion to the weakneſs and prejudices of the Medes and Perſians, by taking from it that excluſive character that rendered it offenſive to other nations, and mixing with it the reveries and viſions of the ancient Zoroaſter. See Hyde's Religio Veterum Perſarum. Prideaux's Conn. of the Old and New Teſtament, vol. i. p. 317, &c. edit. 9. Univ. Hiſt. vol. ii. p. 206, &c. fol.

The account more lately given both of the Perſees and Zend, by M. Anquetil du Perron, differs in ſeveral particulars from that of Dr. Hyde. This gentleman made a voyage to India, and employed himſelf between the years 1755 and 1761 in ſtudying the Perſic and Sanſkrit languages, and in collecting and tranſlating manuſcripts, many of which he brought with him, and depoſited in the king of France's library. His account was read to the Royal Academy of Sciences at Paris, and a tranſlation of it was publiſhed in the Gentleman's Magazine for 1762, and alſo in Dodſley's Annual Regiſter for 1762, part ii. p. 101—127. Of the Perſees or Parſſes, the diſciples of Zoroaſter, he ſays, a very numerous body has been eſtabliſhed more than nine hundred years in Guzerat, to which place they came fugitives from Kerman, A.D. 767, on account of the Mahometan

hometan perfecutions, where their genius for commerce and induftry, which are their known characteriftics, procured for them very confiderable fettlements. Concerning the hierarchy of the Parffes, this writer obferves, that their minifters of religion are divided into five claffes, *viz.* erbeds, mobeds, deftours, deftour mobeds, and deftouran deftours, or deftours of deftours. An erbed is a perfon who has fubmitted to the purification directed by the law, who has read, during four days without interval, the Izefchne and the Vendidad, and who is inftructed in the ceremonies of the worfhip eftablifhed by Zoroafter. If the erbed afterwards continues to read publicly the Zend works, which conftitute the liturgy, and to perform the minifterial functions, he becomes a mobed, though he does not underftand the Zendavefta; but if he contents himfelf with ftudying the law, the Zend, and the Pehlvi, or Pehlavi, without exercifing the minifterial functions, he is called a deftour.

The deftour mobed is he who unites the qualifications of the mobed and deftour; and the deftouran deftour is the principal deftour of a city or province, who decides cafes of confcience, and determines points of law, and to whom the Parffes pay a tithe of their revenues.

As for thofe Zend writings, which the Parffes attribute to their legiflator, and for which they have the fame veneration as the Jews have for their Hebrew text, M. du Perron inclines to think, though he does not affirm, that they are really the works of Zoroafter, whofe reputation has been acquired by laws that have fubfifted two thoufand five hundred years.

The law, which was either framed or regulated by Zoroafter, was divided, as we are told by modern authors, into twenty-one nofhs, or parts: feven treat of the creation and hiftory of the world; feven of morality, and civil and religious duties; and feven of phyfic and aftronomy. Among the Parffes it is an univerfally received tradition, that Alexander the Great condemned thefe twenty-one volumes to the flames, after having caufed them to be tranflated into Greek. Thofe which efcaped are, the Vendidad, the Izefchne, the Viffpered, the Jefchts, and the Neaefchs, in Zend, and fome other Pehlvic tranflations of Zend originals. The Parffes have alfo a great number of prayers, which they call nerengs, and which in general are written in modern Perfic, with Zend characters, which they affect to ufe in all writings that treat of religion, though compofed in modern Perfic. The writings of Zoroafter, which ftill remain, fpeak of the creation of the univerfe, of the terreftrial paradife, and the difperfion of mankind; of the caufe of the refpect paid to fire, of the origin of evil, natural and moral; of the angels appointed to the government of the univerfe; of feveral particulars relating to the end of the world, and the refurrection, &c. &c. They alfo contain predictions with refpect to the latter times, fome excellent moral precepts, and a very extenfive ceremonial code.

The Zend, according to Du Perron, is not the name of Zoroafter's writings, but merely of the characters, though generally ufed to fignify the language itfelf, in which they were written: the language of the original text is called Avefta, and is a dead language, and was entirely unknown to the Parffes before the time of Zoroafter, who, he apprehends, brought it from the mountains; and is totally different from the Pehlvi or ancient Perfic, fpoken in the time of Zoroafter. He farther fuppofes, that the works of Zoroafter, ftill extant in the Pehlvi, were tranflations made into that language during the life of this legiflator, or foon after his death.

The Pazend, which Dr. Hyde makes to be the name of a work, is, according to Du Perron, the name of a language, which is a dialect or corruption of the Avefta, and almoft extinct, except that a few words of it are preferved in the Pehlvic tranflation. The characters of the Avefta and Pehlvi are different; the former, which are properly the Zend letters, being much the neateft; the Pazend has no peculiar alphabet, but adopts that of the Zend or Pehlvic indifferently. (On this fubject, fee *Language of* PERSIA.) For M. du Perron's account of the eighteen MSS. of which he brought duplicate copies with him, and an abftract of their contents, we muft refer to the Ann. Reg. &c. *ubi fupra.*

This writer has publifhed a tranflation of the Zendavefta, with remarks and illuftrations, &c. in 3 vols. 4to. at Paris, in 1771.

The Zend, as fir W. Jones fuggefts (Works, vol. iii. p. 115, 8vo.), bore a ftrong refemblance to Sanfkrit, and the Pehlvi to Arabic, being a dialect of the Chaldaic. Sir W. Jones, from a perufal of two vocabularies, exhibited in this work, one in Zend, and another in Pehlvi, and derived from a collection of traditional pieces in modern Perfian, was confirmed in his opinion concerning the Chaldaic origin of the Pehlvic; and in perufing the Zend gloffary, he was furprifed to find, that fix or feven words in ten were pure Sanfkrit. M. Anquetil, he fays, moft certainly, and the Perfian compiler moft probably, had no knowledge of Sanfkrit, and could not therefore have invented a lift of Sanfkrit words: it muft therefore be an authentic lift of Zend words, which had been preferved in books or by tradition; and hence it follows that the language of the Zend was at leaft a dialect of the Sanfkrit, approaching perhaps as nearly to it as the Pracrit, or other popular idioms which are known to have been fpoken in India 2000 years ago. As foon as M. Anquetil publifhed the above-mentioned work, fir W. Jones immediately difcovered that the work was fpurious, and by no means to be attributed to Zoroafter; in confequence of which he publifhed in the fame year, "Lettre à M. A—— du P—— dans laquelle eft compris l'Examen de fa Traduction des Livres attribués à Zoroaftre." This letter is contained in the 10th volume of his works, ed. 8vo. In Germany this verfion of M. Anquetil has met with more fuccefs, and has not only been tranflated into German, but applied to the purpofes of explaining the New Teftament. This ufe of it has been fuggefted by Michaelis, and exemplified in the illuftration of the introduction to St. John's gofpel, and particularly of the term "word," which is ufed in the Zendavefta in the fame fenfe as by St. John and the Gnoftics for the name of a perfon, and determines the proper tranflation of λογος. (Michaelis by Marfh, vol. i. p. 161.) Several other perfons, befides fir W. Jones, have queftioned the authenticity of the work which M. Anquetil has tranflated, or its being a genuine remain of Zoroafter.

Mr. Richardfon, in his "Differtation on the Language, Literature, and Manners of the Eaftern Nations," originally prefixed to his Perfian, Arabic, and Englifh Dictionary, 1778 (chap. i. fect. 2.), is very fevere, both on Dr. Hyde and M. du Perron. Thofe fragments of the fuppofed works of Zoroafter, which Dr. Hyde has given us under the title of *Sadder*, are, he fays, the wretched rhymes of a modern Parfi deftour or prieft, who lived about three centuries ago; whilft the publications of M. Anquetil du Perron carry palpable marks of the total or partial fabrication of modern times. The Zend language, he fays, is not genuine; and M. du Perron has produced no difcovery which can ftamp his publication with authority.

He adds, the fpecimens of old Perfian in Hyde's Religio Veterum

Veterum Perfarum are fimply modern language in ancient characters.

In the "Memoirs of the Royal Society of Gottingen for 1799," *i. e.* "Commentationes Societatis Regiæ Scientiarum Gottingenfis, &c." we have a memoir by M. Chriftopher Meiners, who enters into a critical examination of the authenticity and antiquity of the books publifhed by M. Anquetil du Perron, as genuine writings of Zoroafter; and alleges many plaufible arguments to prove them recent and fpurious. He fhews, that they contain a multitude of fables, totally unknown to the ancient Perfians, and contrary to the fpirit of their laws and religion; and alfo many opinions and ceremonies, which had their firft rife many ages after Zoroafter. The differtations of profeffor Meiners, relating to the Zendavefta, are printed in the 8th volume of the Novi Commentarii Soc. Reg. Gotting.; and in the 1ft and 3d volumes of the Commentationes.

Some have thought that the truths which are obfervable in Zendavefta, Vendidad Sadi, and other writings of the eaftern nations, were derived from the difciples of Neftorius, who were found very early on the coaft of Malabar. But this, Mr. Bryant thinks, is a groundlefs furmife; becaufe the religious fects, among which thefe writings have been preferved, are widely feparated, and moft of them have no connection with Malabar or the Chriftians of that quarter. And befides, the Brahmins and Banians adhere clofely to their own rites, and abhor all other perfuafions; and they are influenced by cuftoms and fcruples, which prevent their intercourfe with other people. In their writings there occurs no trace of Chriftianity, or of its founder; and thence Mr. Bryant infers, that whatever truths may be found in the writings of thefe people, they were derived from a higher fource, and by a different channel. See Anal. of Anc. Mythology, vol. iii. p. 599, &c.

We fhall terminate this article with adding, that Dr. Hyde prefented the copy of part of the Zend writings in his poffeffion to the univerfity of Oxford; and that the whole Zend was afterwards brought from India by Mr. Frazer, and is lodged with his other oriental MSS. in the Radcliff library at Oxford.

ZENDERO, in *Geography*. See GINGIRO.

ZENDEROUD. See ZEINDEROOD.

ZENDGIN SERAI, a town of Grand Bucharia; 30 miles S. of Samarcand.

ZENDORFF, a town of the duchy of Stiria; 12 miles E. of Landfperg.

ZENECHDON, a term ufed by the Arabian phyficians for a preparation of arfenic, for external ufe; *zeech* being their name for arfenic.

ZENEXTOR, one of the many names by which the chemifts have called mercury.

ZENGAN, ZENIGAN, or *Zinjan*, in *Geography*, a town of Perfia, in the province of Irak, faid to have been fortified many years before the Chriftian era, and at one time to have contained 20,000 houfes. It was entirely deftroyed by Timur Bec when he firft paffed through that part of Perfia; but being informed that it had long been the feat of learning and fcience, on his return from Turkey he in part rebuilt it. Since that time it has been frequently facked and deftroyed by the Tartars and the Turks. It contained in the 17th century about 2000 houfes. It is a large, and now apparently a profperous town, capital of the extenfive diftrict of Khumfeh, which is 71 miles down an uneven country, full of deep ravines, from hence to the banks of the Kizilozien, or golden ftream, the natural boundaries of Irak and Azerbijan; 21 miles N.W. by W. of Sultania.

ZENGH. See SEGNA.

ZENGHI, a river of Armenia, which runs into the Aras, 10 miles S. of Erivan.

ZENGIFUR, a word by which fome of the chemical writers have expreffed cinnabar.

ZENGITZA, in *Ancient Geography*, a promontory of Africa, in Ethiopia, upon the gulf of Barbary. Ptolemy.

ZENGUIA, in *Geography*, a town of Syria, in the pachalic of Aleppo, on the Euphrates; 55 miles N.N.E. of Aleppo.

ZENHAGA. See ZANHAGA.

ZENI, a word ufed by many of the chemical writers as a name for vitriol.

ZENIC, or ZENIK, in *Zoology*, a fpecies of weafel. See VIVERRA.

ZENICON, the name of a poifon, compofed of feveral ingredients, and ufed to poifon the tips of the arrows with which the Celtic hunters fhot at the beafts they purfued for food. The poifon was known to be of that quick fpreading nature, that as foon as the beaft was fallen, the huntfman ran up to it, and cut out a large piece of the flefh about the wound immediately, to hinder the venom from fpreading farther. The antidote to this poifon was fuppofed to be the leaves of oak, beech, and other trees.

ZENIEH, in *Geography*, a town of Afiatic Turkey, in Caramania; 15 miles of Selefkeh.

ZENITH, in *Aftronomy*, is derived from an Arabic word fignifying *point*, and is that peculiar point in the vifible celeftial hemifphere, which, at a given time, is vertical to a fpectator, fituated on any part of the earth's furface, and from which, if a perpendicular line were demitted through the place of the fpectator, it would proceed to the centre of the earth. Of all the points in the apparent concavity of the vifible hemifphere, the *zenith point* is the moft interefting; it is not only the pole of the local horizon of every place, and of all parallels of altitude, but is the point to which all the grand circles of the fphere are referred, and through which not only the great circles connecting the cardinal points, but all the circles of azimuth pafs and interfect one another; and further, it is the only point in the celeftial expanfe that is not affected by atmofpheric *refraction*. If the earth had no annual or diurnal motion, nor any nutation of its axis, the zenith of each place on the earth's furface would be fo many fixed points in the heavens; but as none of thefe is the cafe, the actual zenith of every place, except over the two poles of the earth, is continually changing. The annual orbit of the earth is indeed fo fmall in comparifon of the diftance of a ftar from it, that the parallax arifing therefrom is too fmall to be appreciable with certainty even by the beft inftruments; but the effect of *nutation* of the earth's axis is very perceptible, as is alfo the *aberration* of light occafioned by the earth's progrefs in its annual orbit; and thefe will both confpire to render the *apparent* a little different from the *true* zenith. It is, however, the earth's diurnal motion that produces the principal change in the celeftial fituation of the zenith; for as this planet revolves on its axis, any given place on its furface has a correfponding fucceffion of zeniths, which defcribe a circle, at the diftance of its co-latitude from the neareft pole; and hence a fucceffion of ftars fituated in this circle will appear to tranfit the zenith in a direction contrary to that of the earth's diurnal motion in every fidereal day, or time of one entire rotation. Hence, though the zenith of any place may be confidered as a fixed point in the heavens, as to its *direction*, when viewed by a fpectator; yet as it has reference to the apparent place of a heavenly body, it is not fixed, becaufe the earth's motion is continually carrying the fpectator's eye in a circle that produces the optical effect of an apparent circumpolar revolution of the celeftial bodies. Whatever point of the hemifphere is at any moment vertical to an obferver on any part of the globe, *that point* is the *zenith* for the time *then paffing*, and will again be the zenith, or very nearly fo, after an interval of one complete rotation of the earth; and, therefore, ftrictly fpeaking, in every place there are as many fucceffive zeniths in this period, as there are appreciable points in the circle generated in the heavens by the fuperior end of the vertical line carried round by the globe in rotation.

Becaufe every point of the horizon is juft 90° diftant from the exifting zenith, in every place, and at all times, it will be readily apprehended, that the complement of the altitude of any heavenly body will, at any inftant, be the angular diftance of that body from the zenith of the place of obfervation; but as this diftance varies inverfely with the altitude, it is more properly called the *co-altitude* than the *zenith-diftance*, the former being a variable, and the latter a limited quantity. The *zenith-diftance* of any ftar is properly the complement of its *meridian* or *greateft* altitude in any given place, and as the latitude of the place varies, fo will the zenith-diftance of the fame body, but inverfely; the diftance of the zenith to the pole being always the complement of the latitude. Hence it is obvious, that when the zenith-diftance of a ftar is obferved by any inftrument that meafures it accurately, the latitude of the place may be inferred from the tabular polar diftance of that ftar, as well as from the declination, which is its complement; and, therefore, it is a matter of no importance in theory, whether the altitude or zenith-diftance of a body tranfiting the meridian be taken, for the purpofe of afcertaining its place in the heavens, when the latitude of the obferver is known, or for the purpofe of determining the latitude of the place, when the declination, or polar diftance of the body, is known. Accordingly, in the circular inftruments that have been recently introduced into obfervatories, and that will reverfe in pofition, it is ufual to number the divifions and fubdivifions fo, that when they read altitudes with the graduated plane facing the eaft, they read zenith-diftances (on the meridian) when the fame is made to face the weft, and *vice verfâ;* fo that not only are the oppofite errors of collimation of the telefcope and of the bubble or plumb-line thus corrected, but when atmofpheric refraction is allowed for, the fum of the two readings, or of the averages of feveral, will be exactly 90°, or otherwife 180°, if the obfervations be truly taken, and the inftrument duly adjufted for zero and collimation; which check is of great practical importance in the delicate operations of the aftronomer.

Zenith-*Sector* is an *aftronomical* inftrument, by means of which the angular diftance of a ftar is accurately meafured from the zenith point of any given place towards the north or fouth. The firft inftrument made ufe of for this purpofe was contrived by Dr. Hooke, with a view of determining the annual parallax of a fixed ftar, agreeably to the fuggeftion of Galileo. The telefcope, which Dr. Hooke, in the year 1669, made the effential part of his inftrument, was thirty-fix feet long, the principle of achromatifm not being at that time practically applied, fo as to allow of confiderable power with a fhort focal diftance of the object-glafs; but the length of the radius of his arc of meafurement promifed advantages over every other inftrument, which juftified the conception and execution of the plan, though its accomplifhment failed of correfponding fuccefs. Indeed, the nice arts of conftructing achromatic telefcopes, and of dividing the arc of a circle with extreme precifion, had neither of them yet been perfected. From the Cutlerian Lectures we learn, that the firft obfervation with this inftrument was made on the 6th of July of the above-mentioned year, on the ftar denominated γ Draconis, which, on that evening, was found to pafs at the diftance of 2′ 12″ to the north of the zenith of Grefham college; which was alfo found to be the cafe on the 9th of the fame month: but on the 6th of Auguft next following, the diftance was only 2′ 6″; and on the 21ft of October after only 1′ 48″, or 1′ 50″; whence it was concluded, that the meafurement of a zenith-diftance taken by this inftrument was liable to an error of 24″, or perhaps more; and it was confidered, therefore, that the inftrument was quite incompetent to the purpofe for which it was intended. But an original idea once fuggefted, as the bafis of ufeful fpeculation, is not readily abandoned, even under an apparent want of fuccefsful application. The Hon. Samuel Molyneux afterwards availed himfelf of the manual fkill of the ingenious Graham, and by the affiftance of Dr. Bradley put up a zenith-fector at Kew, in the year 1725, which turned out to be much more accurate than its predeceffor, though the focal length of the object-glafs of its telefcope was only 24¼ feet. With this inftrument, and with one of about one-half its focal length, were made two of the moft important difcoveries in aftronomy that have graced the annals of this fcience; *viz.* the *nutation* of the earth's axis, and the *aberration of light* in its paffage from the heavenly bodies. As the hiftory of aftronomical difcoveries, and that of aftronomical inftruments, are mutually illuftrative of each other, and as a detail of the *minutiæ* is always interefting, that connect great refults with primary meafures, that might otherwife be confidered as infignificant, we will make no apology for introducing here Dr. Bradley's own account of his proceedings, as inferted in the Philofophical Tranfactions of London, N° 406. p. 149 of the Abridg.

"The following obfervations," fays the author, "were begun by the honourable Samuel Molyneux at Kew, continued and repeated by myfelf at Kew and Wanftead, in hopes of verifying thofe that Dr. Hooke formerly communicated to the public, concerning the *parallax of the fixed ftars.* (London, 1674.) Therefore the fame ftar was made choice of by Mr. Molyneux, almoft the fame method followed, and his inftrument conftructed upon principles nearly the fame, but greatly exceeding the doctor's in exactnefs, which was chiefly owing to our curious member (of the Royal Society) Mr. George Graham, to whom the lovers of aftronomy are alfo indebted for feveral other exact and well-conftructed inftruments. Mr. Molyneux's apparatus was completed and fitted for obferving about the end of November, 1725; and on the 3d day of December following, the bright ftar in the head of Draco (marked γ by Bayer) was for the firft time obferved, as it paffed near the zenith, and its fituation carefully taken with the inftrument. The like obfervations were made on the 5th, 11th, and 12th days of the fame month; and there appearing no material difference in the place of the ftar, a farther repetition of them at this feafon feemed needlefs, it being a part of the year wherein no fenfible alteration of parallax in this ftar could foon be expected. It was chiefly, therefore, curiofity that tempted me (being then at Kew, where the inftrument was fixed) to prepare for obferving the ftar on Dec. 17th, when, having adjufted the inftrument as ufual, I perceived that it paffed a little more foutherly this

 day

day than when it was obſerved before. · Not ſuſpecting any other cauſe of this appearance, we firſt concluded, that it was owing to the uncertainty of the obſervations, and that either this or the foregoing were not ſo exact as we had before ſuppoſed; for which reaſon we propoſed to repeat the obſervation again, in order to determine from whence this difference proceeded; and upon doing it on Dec. 20th, I found that the ſtar paſſed ſtill more ſoutherly than in the former obſervations. This ſenſible alteration the more ſurpriſed us, in that it was the *contrary way* from what it would have been had it proceeded from an annual parallax of the ſtar; but being now pretty well ſatisfied that it could not be entirely owing to the want of exactneſs in the obſervations, and having no notion of any thing elſe that could cauſe ſuch an apparent motion as this in the ſtar, we began to think that ſome change in the materials, &c. of the inſtrument itſelf might have occaſioned it. Under theſe apprehenſions we remained ſome time; but being at length fully convinced, by ſeveral trials, of the great exactneſs of the inſtrument, and finding by the gradual increaſe of the ſtar's diſtance from the pole, that there muſt be ſome regular cauſe that produced it, we took care to examine nicely, at the time of each obſervation, how much it was: and about the beginning of March, 1726, the ſtar was found to be 20″ more ſoutherly than at the time of the firſt obſervation. It now, indeed, ſeemed to have arrived at its utmoſt limit ſouthward, becauſe in ſeveral trials made about this time, no ſenſible difference was obſerved in its ſituation. By the middle of April, it appeared to be returning back again towards the north; and about the beginning of June, it paſſed at the ſame diſtance from the zenith as it had done in December, when it was firſt obſerved.

" From the quick alteration of this ſtar's declination about this time, (it increaſing a ſecond in three days,) it was concluded, that it would now proceed northward, as it before had gone ſouthward of its preſent ſituation; and it happened as was conjectured; for the ſtar continued to move northward till September following, when it again became ſtationary, being then near 20″ more northerly than in June, and no leſs than 39″ more northerly than it was in March. From September the ſtar returned towards the ſouth, till it arrived in December to the ſame ſituation it was in at that time twelve months, allowing for the difference of declination on account of the preceſſion of the equinox.

" This was a ſufficient proof that the inſtrument had not been the cauſe of this apparent motion of the ſtar; and to find one adequate to ſuch an effect ſeemed a difficulty. A *nutation of the earth's axis* was one of the firſt things that offered itſelf upon this occaſion; but it was ſoon found inſufficient; for though it might have accounted for the change of declination in γ Draconis, yet it would not at the ſame time agree with the phenomena in other ſtars; particularly in a ſmall one almoſt oppoſite in right aſcenſion to γ Draconis, at about the ſame diſtance from the north pole of the equator; for, though this ſtar ſeemed to move the ſame way as a nutation of the earth's axis would have made it, yet in changing its declination but about as much as γ Draconis in the ſame time, (as appeared upon comparing the obſervations of both made upon the ſame days, at different ſeaſons of the year,) this plainly proved that the apparent motion of the ſtars was not occaſioned by a real nutation, ſince, if that had been the cauſe, the alteration in both ſtars would have been near equal.

" The great regularity of the obſervations left no room to doubt, but that there was ſome regular cauſe that produced this unexpected motion, which did not depend on the uncertainty or variety of the ſeaſons of the year. Upon comparing the obſervations with each other, it was diſcovered, that in both the fore-mentioned ſtars, the apparent difference of declination from the *maxima* was always nearly proportional to the verſed ſine of the ſun's diſtance from the equinoctial points. This was an inducement to think, that the cauſe, whatever it was, had ſome relation to the ſun's ſituation with reſpect to thoſe points. But not being able to frame any hypotheſis at that time, ſufficient to ſolve all the phenomena, and being very deſirous to ſearch a little farther into this matter, I began to think of erecting an inſtrument for myſelf at Wanſtead, that, having it always at hand, I might with the more eaſe and certainty inquire into the laws of this new motion. The conſideration, likewiſe, of being able by another inſtrument to confirm the truth of the obſervations hitherto made with Mr. Molyneux's was no ſmall inducement to me; but the chief of all was the opportunity I ſhould thereby have of trying in what manner other ſtars were affected by the ſame cauſe, whatever it was. For Mr. Molyneux's inſtrument being originally deſigned for obſerving γ Draconis, (in order, as I ſaid before, to try whether it had any ſenſible parallax,) was ſo contrived, as to be capable of but little alteration in its direction, not above ſeven or eight minutes of a degree; and there being few ſtars within half that diſtance from the zenith of Kew bright enough to be well obſerved, he could not, with his inſtrument, thoroughly examine how this cauſe affected ſtars differently ſituated with reſpect to the equinoctial and ſolſtitial points of the ecliptic.

" Theſe conſiderations determined me; and by the contrivance and direction of the ſame ingenious perſon, Mr. Graham, my inſtrument was fixed up, Auguſt 19, 1727. As I had no convenient place where I could make uſe of ſo long a teleſcope as Mr. Molyneux's, I contented myſelf with one of but little more than half the length of his, (*viz.* of about $12\frac{1}{2}$ feet, his being $24\frac{1}{4}$,) judging from the experience which I had already had, that this radius would be long enough to adjuſt the inſtrument to a ſufficient degree of exactneſs; and I have had no reaſon ſince to change my opinion: for from all the trials I have yet made, I am very well ſatisfied that when it is carefully rectified, its ſituation may be ſecurely depended upon to half a ſecond. As the place where my inſtrument was to be hung in ſome meaſure determined its radius, ſo did it alſo the length of the arc, or limb, on which the diviſions were made to adjuſt it; for the arc could not conveniently be extended farther than to reach to about $6\frac{1}{4}°$ on each ſide my zenith. This indeed was ſufficient, ſince it gave me an opportunity of making choice of ſeveral ſtars, very different both in magnitude and ſituation; there being more than two hundred inſerted in the Britiſh Catalogue, that may be obſerved with it. I needed not to have extended the limb ſo far, but that I was willing to take in *Capella*, the only ſtar of the firſt magnitude that comes ſo near my zenith.

" My inſtrument being fixed, I immediately began to obſerve ſuch ſtars as I judged moſt proper to give me light into the cauſe of the motion already mentioned. There was variety enough of ſmall ones, and not leſs than twelve that I could obſerve through all the ſeaſons of the year; they being bright enough to be ſeen in the day-time, when neareſt the ſun. I had not been long obſerving, before I perceived that the notion we had before entertained of the ſtars being fartheſt north and ſouth, when the ſun was about the equinoxes, was only true of thoſe that were near the ſolſtitial colure; and after I had continued my obſervations a few months,

months, I discovered what I then apprehended to be a general law observed by all the stars, *viz.* that each of them became stationary, or was farthest north or south, when they passed over my zenith at six of the clock, either in the morning or evening. I perceived likewise, that whatever situation the stars were in with respect to the cardinal points of the ecliptic, the apparent motion of every one tended the same way, when they passed my instrument about the same hour of the day or night; for they all moved southward while they passed in the day, and northward in the night; so that each was farthest north, when it came about six of the clock in the evening, and farthest south, when it came about six in the morning.

"Though I have since discovered, that the *maxima* in most of these stars do not happen exactly when they come to my instrument at those hours; yet not being able at that time to prove the contrary, and supposing that they did, I endeavoured to find out what proportion the greatest alterations of declination in different stars bore to each other, it being very evident that they did not all change their declination equally. I have before taken notice, that it appeared from Mr. Molyneux's observations, that γ Draconis altered its declination about twice as much as the fore-mentioned small star almost opposite to it; but examining the matter more particularly, I found that the greatest alteration of declination in these stars was as the sine of the latitude of each respectively. This made me suspect that there might be the like proportion between the *maxima* of other stars; but finding that the observations of some of them would not perfectly correspond with such an hypothesis, and not knowing whether the small difference I met with might not be owing to the uncertainty and error of the observations, I deferred the farther examination into the truth of this hypothesis, till I should be furnished with a series of observations made in all parts of the year, which might enable me not only to determine what errors the observations are liable to, or how far they may safely be depended upon, but also to judge whether there had been any sensible change in the parts of the instrument itself.

"Upon these considerations, I laid aside all thoughts at that time about the *cause* of the fore-mentioned phenomena, hoping that I should the more easily discover it, when I was better provided with proper means to determine more precisely what they were.

"When one year was completed, I began to examine and compare my observations; and having pretty well satisfied myself as to the general laws of the phenomena, I then endeavoured to find out the cause of them. I was already convinced that the apparent motion of the stars was not owing to a *nutation* of the earth's axis. The next thing that offered itself was an *alteration* in the *direction* of the *plumb-line*, with which the instrument was constantly rectified; but this, upon trial, proved insufficient. Then I considered what *refraction* might do, but here also nothing satisfactory occurred. At last I conjectured that all the phenomena hitherto mentioned proceeded from the *progressive motion of light*, and the *earth's annual motion in its orbit*. For I perceived that if light was propagated in time, the apparent place of a fixed object would not be the same when the eye is at rest, as when it is moving in any other direction than that of the line passing through the eye and object; and that when the eye is moving in different directions, the apparent place of the object would be different."

The author then proceeds to deduce from his observations the relative velocities of light, and of the earth in its annual orbit; shews what variation in the right ascension and declination of stars differently placed may arise out of the *aberration* of light; and concludes that light, agreeably to such deductions, must travel from the sun to the earth in about $8' \, 7''.5$ of time. (See ABERRATION, LIGHT, and STARS.) The discovery of the earth's *nutation* was not, however, published until the year 1737. See NUTATION.

After our readers have seen what important discoveries and deductions have been derived from Graham's zenith-sector in the hands of a skilful astronomer, they will be naturally disposed to become acquainted with its construction, which we will now proceed to describe.

Zenith-Sector by Graham.—The zenith-sector that we have said Graham made for Mr. Bradley, afterwards Dr. Bradley, was removed to Greenwich, when the proprietor became astronomer royal, and is the same instrument which Dr. Maskelyne used with great success in adjusting, by comparison, the zero of the large quadrants. It still remains at Greenwich, and is yet capable of measuring zenith-distances to the accuracy of half a second, according to Bradley's original report, or even less. *Fig.* 1. of *Plate* XXXIII. of *Astronomical Instruments*, is a representation of the essential parts of this instrument: A B represents the iron tube of the vertical telescope, which is suspended by two small metallic cylinders projecting at right angles from the superior end, one of which is seen at *a*, and the other is hidden by the tube. These cylinders, which constitute the axis of motion, rest in a pair of Ys, attached to the solid wall facing the north, and also occasionally to another pair fixed to a wall facing the south; which additional pair allows the ends of the cylinders, or axis of motion, to be reversed in position. The brass bar C D is fixed to the same wall to which the pair of Ys are attached, at opposite sides of the room, and bears a cock to which the micrometer-screw E is fixed, which measures the fractional portion of a minute on its head *b*; and the second screw *c* is made to relieve it. The ends of these screws press against studs inserted into the tube of the telescope, while the weight F pulls a string round the fixed pulleys G and H, by means of a pliable cord, attached to the tube at the point *d*, and keeps the telescope home. The graduated arc I K contains $12\frac{1}{2}°$, each subdivided into twelve parts, or five minute spaces, and is fixed exactly at right angles to the tube, over the point where the wires intersect the field of view. This arc was originally of brass, but Sisson put on an arc of steel, containing gold pins to receive the dots of division. A plumb-line suspended from the superior end of the tube, over the centre of one of the cylinders *a*, and having an adjusting screw *e*, to bring the point of suspension to the upper dot, falls near the face of the arc, and indicates the distance from zero at the middle of the arc; if the plumb-line covers one of the dividing dots of the scale, when a star near the zenith is cut by the horizontal wire, then the quantity is read by the plumb-line and arc alone; but otherwise the fractional portion is ascertained by means of the micrometer-screw, which is made to press against the tube until the suspended line coincides with the next nearest dividing dot of the scale. The value of the micrometer-head, which is divided into thirty-four equal parts, was ascertained by trying how many revolutions of the screw would measure a degree, or other portion of the arc, exactly; and on an average of several trials made in different parts of the arc, it was ascertained, that one revolution was not precisely $34''$, but $33''.6328$, and one of its divisions on the head, therefore, only $0''.9892$, instead of $1''$, as was intended by the maker. The instrument had originally a single lens for its object-glass; but at the request of the late Dr. Maskelyne, Mr. Dollond substituted

ſtituted an achromatic object-glaſs, which has modernized the inſtrument, and put it nearly on a level with the new inſtruments which have lately been conſtructed and erected in the Royal Obſervatory by Troughton, on the beſt principles. If the zenith-ſector had been made to reverſe in poſition in the ſame ſituation, *i. e.* without being carried acroſs the room, its uſe would have been more convenient, and the obſervations more certain, inaſmuch as the ſame diſtance would have been preſerved between the axis of motion of the teleſcope, and the point acted upon by the micrometer-ſcrew, without any reſulting allowance. Beſides, the inſtrument would have been leſs liable to accidents; and reverſed obſervations might probably have been made on the ſame evening. When Bird afterwards made a zenith-ſector for the Oxford Obſervatory, he noticed theſe inconveniences, and obviated them by making the tube of the teleſcope turn round in its own place, ſo that the poſitions of the axis can be reverſed by an azimuthal motion that carries the plumb-line round at the ſame time; and when the plumb-line will cover the dot at zero during this whole motion, the teleſcope is truly vertical.

The adjuſtment for collimation is effected by an apparatus that moves the wires in the eye-piece, as in the tranſit-inſtrument, and may be thus effected: Let the graduated arc face the eaſt, and view a ſtar paſſing in or near the zenith, the proper time for doing which may be known from the ſtar's right aſcenſion, by means of a ſidereal clock, or by converſion of ſolar into ſidereal time, and note the diſtance from zero when the plumb-line is quiet, which it will ſoon be if the plummet is immerſed in a goblet of water, and mark down this quantity as read partly by the diviſions on the ſcale, and partly by the micrometer-head; which call the *eaſtern* meaſure with N. or S. annexed, accordingly as the ſtar paſſes to the north or ſouth ſide of the zenith point: then reverſe the poſition, and on a ſucceeding night, which will be $3' 56''$ ſooner on every ſucceſſive night, meaſure the zenith-diſtance of the ſame ſtar in like manner with the graduated ſcale facing the weſt; and call it the *weſtern* meaſure: then if the two quantities thus meaſured be ſimilar, the collimation for zenith-diſtance will be true; but if otherwiſe, one half of the difference of the two readings will be the *error* of collimation, which may be either corrected by the proper apparatus at ſucceſſive trials, or, which is perhaps better, may be allowed for in each obſervation. When the inſtrument has been uſed for ſeveral obſervations, it will be ſtill better to take an average of all the obſerved errors, as aſcertained by different ſtars, and to apply it with its proper ſign in future ſingle obſervations, ſo long as the inſtrument remains in all reſpects unaltered. It is hardly neceſſary to obſerve, that in uſing this inſtrument, when a ſtar is very near the zenith of any place, the micrometer alone, without reference to the graduated ſcale or arc, will give the due meaſure. How the latitude of any place may be very accurately determined from the meaſured zenith-diſtance of a ſtar, of known declination, will be ſeen preſently.

Zenith-Sector by Ramſden.—While the trigonometrical ſurvey of England was carrying on, it was found deſirable to have a portable zenith-ſector to aſſiſt in meaſuring an arc of the meridian, and as Ramſden had one in an half-finiſhed ſtate, that had been ordered by the duke of Richmond, the parties were prevailed on to have this finiſhed for the purpoſe, which was nearly done in Ramſden's life-time, in the year 1801, and completed in April 1802 by his ſucceſſor Berge. It was firſt tried at Greenwich, and then removed to the Iſle of Wight, where the operations began, and from whence they were continued northward from ſtation to ſtation, as deſcribed in the "Trigonometrical Survey," by captain William Mudge, and publiſhed from time to time by Mr. Faden, of Charing-Croſs. The original account of this complex inſtrument has reference to ſix large plates, and is too long for us to copy. (See vol. ii. p. 6. *& ſeq.* of part ii.) *Fig.* 2. of our *Plate* XXXIII. of *Aſtronomical Inſtruments*, gives a reduced perſpective view of this inſtrument, from an examination of which a better idea will be formed of its general conſtruction than by any detailed account we can give of its parts without the additional plates.

Captain Mudge ſays, "that Mr. Ramſden has here obviated the inconveniences attendant on the uſe of former ſectors; and has alſo diminiſhed, in a very conſiderable degree, the errors unavoidably reſulting from their imperfect conſtruction. The principles, he adds, on which he has founded the ſeveral improvements, conſiſt in the means of uniting the ſectorial tube to its axis, ſo as to enſure the permanency of the length of its radius, when erected for obſervations; more accurate methods of adjuſting the inſtrument vertically; and an eaſy way of placing the face of its arc in the plane of the meridian." The frame exhibited in our figure conſiſts of two parts; the external ſtand of mahogany, which ſupports the apparatus to which the ſectorial tube is attached; and an inner frame, containing that apparatus with the tube itſelf. The ſtand, or outer frame, is in the ſhape of an obtruncated pyramid, having a baſe ſix feet ſquare, and its vertex three. It unites ſtrength with ſimplicity of conſtruction. The inner frame, within which the ſector is ſuſpended, is ſupported at top in every lateral direction, while its lower extremity is terminated by a cone reſting in a metallic concavity, on which it turns in azimuth; and it can be kept in any poſition by a clamping apparatus acting with an azimuth circle, made faſt to the bottom of the external frame. The teleſcope of the ſector has an object-glaſs nearly eight feet long, with an aperture of four inches, near which is made faſt the tranſverſe axis of motion, ſimilar to that of a tranſit-inſtrument. The wires of the eye-piece of the teleſcope are illuminated by reflected light, entering the axis in the uſual way; and a plumb-line, with the ghoſt apparatus for adjuſtment to zero, is made a leading feature in the conſtruction. The arc is divided into 15°, which was the concluding work done by Berge, and each degree is ſubdivided into $5'$ ſpaces, as in Graham's inſtrument. A ſecond teleſcope, of 29 inches focal length, is attached to the long tube, and moves in the plane of the divided arc to any given elevation, but partakes of the azimuthal motion when the long vertical teleſcope is turned round: with this 29-inch teleſcope horizontal angles are meaſured, by the help of the azimuth circle, which therefore is divided for this purpoſe. Beſides theſe eſſential parts, there are various appendages and bracing parts, rendered neceſſary by the ſize of the inſtrument, particularly a microſcopic tube reaching up to the upper dot of the plumb-line, and bent at both ends into a horizontal poſition for convenience of the obſerver. This contrivance required reflectors, both of the light, and of the image of the piece of mother-of-pearl that is biſected by the wire, conſtituting the plumb-line. The micrometer meaſures minutes and ſeconds in the uſual way, and the plummet is immerſed in a ſmall veſſel of water to prevent vibration. We mention theſe particulars *generally*, not only becauſe their particular uſes and modes of application have been previouſly deſcribed, when we explained other inſtruments, ſuch as CIRCLES, EQUATORIALS, TRANSIT-*Inſtruments*, &c.; but becauſe this inſtrument has furniſhed hints to others who have copied in part, or wholly, ſeveral of Ramſden's contrivances. It was moreover neceſſary to introduce various weights, pulleys, cords, ſprings, &c. to facilitate and keep ſteady the motions of the different acting parts, which, together with the reading microſcopes, lamps, rods, and adjuſting ſcrews, give the inſtrument the appearance of great complexity.

The manner of adjuſting the inſtrument for obſervation is thus performed, according to Mr. Mudge's own words: *viz.* "The feet of the external ſtand ſhould be firſt carefully brought into a horizontal plane; and when they are ſo, the azimuth circle will be neceſſarily parallel to it, having its centre under the middle of the opening in the mahogany frame ſcrewed on the top of the ſtand. This being done, and the inſtrument ſet up, the plane of the arc ſhould be brought parallel to one of the ſides of the ſtand, in which ſituation the internal frame is to be clamped to the azimuth circle, and the wire brought to its proper diſtance from the limb, by means of the adjuſting ſcrew attached to one of the ſliders, which carries the concave receptacle and conical point. The dot at zero ſhould then be brought exactly under the plumb-line, as ſeen through the magnifier, and the point on the micrometer-head, at which its index ſtands, noted. The inſtrument is then to be turned half round; and if the ſame dot on the arc ſtill continues biſected, it will afford a proof of the internal ſtand being upright in one direction. But if the dot ſhould not continue biſected by the plumb-line, it muſt be made to do ſo, and the revolutions, or parts of a revolution, counted; half of which is to be turned back on the micrometer-head. The ſame dot, zero, is then to be brought under the plumb-line (wire), by means of the other adjuſting ſcrew, beneath the azimuth circle. If the ſtand is pretty accurately ſet up, one operation is ſufficient for bringing the interior frame upright in one direction, *viz.* either in that of the meridian, or the one at right angles to it. The arc is then to be turned round 90°, and the ſame operation gone through. This being properly done, the interior frame is made perfectly upright. The next ſtep to be taken is that of placing the long level on its axis above, and rectifying that axis by means of the Y plate ſcrews. If this be done carefully, the bubble will remain between the pointers of the level, whatever poſition the ſector may be placed in. Having thus rectified the inſtrument, by making the internal frame upright, and the axis horizontal, the only remaining point to engage attention is, placing the plumb-line at a proper diſtance from the arc: this is done by means of the ſcrew acting on the ſpring juſt under its point of ſuſpenſion. If great care be uſed in going through theſe ſeveral adjuſtments, the inſtrument may, at any future time, be accurately adjuſted for obſervation by turning the proper ſcrew belonging to the azimuth circle, and bringing the arc to its uſual diſtance from the wire."

In order to ſhew the accurate reſults that may be obtained from an inſtrument of this deſcription, and alſo the care that is neceſſary in uſing it, and in clearing the obſervations of errors ariſing from natural cauſes, we will ſubjoin a few Tables that were found uſeful in the grand trigonometrical operations, by means of which, in the years 1802 and 1806, the meridian arcs were compared with the correſponding terreſtrial meaſurements.

Table ſhewing the Runs of the Micrometer-Screw over every Five Minutes in the Firſt Degree on each Side of Zero.

Right-Hand Arc.					Left-Hand Arc.				
At	Rev.	Div.	Rev.	Div.	At	Rev.	Div.	Rev.	Div.
0° 0′	8	55.43	5	4.45	0° 0′	9	16.31	5	4.54
0 5	14	0.88			0 5	4	11.77		
0 5	9	32.55	5	4.55	0 5	9	8.73	5	4.56
0 10	14	37.10			0 10	4	4.17		
0 10	9	40.03	5	4.34	0 10	8	53.67	5	4.50
0 15	14	44.37			0 15	3	49.17		
0 15	9	19.13	5	4.45	0 15	9	16.13	5	4.44
0 20	14	23.58			0 20	4	11.69		
0 20	9	54.07	5	4.40	0 20	9	17.50	5	4.53
0 25	14	58.47			0 25	4	12.97		
0 25	9	39.23	5	4.41	0 25	10	4.30	5	4.50
0 30	14	43.64			0 30	4	58.80		
0 30	9	25.77	5	4.44	0 30	8	52.0	5	4.47
0 35	14	30.21			0 35	3	47.53		
0 35	9	58.53	5	4.54	0 35	9	7.83	5	4.53
0 40	15	4.07			0 40	4	3.30		
0 40	9	0.53	5	4.54	0 40	9	3.31	5	4.41
0 45	14	5.07			0 45	3	57.90		
0 45	9	12.47	5	4.55	0 45	9	12.63	5	4.40
0 50	14	17.02			0 50	4	8.23		
0 50	9	43.07	5	4.43	0 50	9	4.50	5	4.47
0 55	14	47.50			0 55	4	0.03		
0 55	8	41.27	5	4.50	0 55	8	35.0	5	4.57
1 0	13	45.77			1 0	3	30.43		

TABLE for converting the Divisions shewn on the Micrometer Head into Seconds, the Space subtended by Five Minutes on the Limb being found equal to Five Revolutions and Forty-five Divisions, as deduced from the Measurement of the total Arcs.

Div.	"	Div.	"
1	1.002	31	31.052
2	2.003	32	32.053
3	3.005	33	33.055
4	4.007	34	34.057
5	5.008	35	35.058
6	6.010	36	36.060
7	7.012	37	37.062
8	8.013	38	38.063
9	9.015	39	39.065
10	10.016	40	40.067
11	11.018	41	41.068
12	12.020	42	42.070
13	13.022	43	43.072
14	14.023	44	44.073
15	15.025	45	45.075
16	16.027	46	46.077
17	17.028	47	47.078
18	18.030	48	48.080
19	19.032	49	49.082
20	20.033	50	50.083
21	21.035	51	51.085
22	22.037	52	52.087
23	23.038	53	53.088
24	24.040	54	54.090
25	25.042	55	55.092
26	26.043	56	56.093
27	27.045	57	57.095
28	28.047	58	58.097
29	29.048	59	59.098
30	30.050	60	60.100

TABLE for supplying the necessary Correction to the observed Zenith-Distance of a Star, on account of the Expansion or Contraction of the Sectorial Tube by One Degree of Heat.

Zenith Distance observed.		Correction for One Degree of Heat.
°	′	"
1	0	0.018
1	30	0.028
2	0	0.037
2	30	0.046
3	0	0.056
3	30	0.065
4	0	0.074
4	30	0.084
5	0	0.093
5	30	0.102
6	0	0.111
6	30	0.121
7	0	0.130
7	30	0.139

OBSERVATIONS made by Captain William Mudge on the Zenith-Distances of γ Draconis, with Ramsden's Zenith-Sector, at different Places.

TABLE I.—Greenwich Observatory, 1802. Point on the Limb 0° 0′ N.

Day of the Month.	Face.	Plumb-line.		Observation of the Star.		Zenith-Distance in Revolutions.				Zenith-Distance Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	"	Inches.	°	
Apr. 16	W.	10	21.73	8	18.5	0	0	2	3.23	0	2	1.43	29.9	45.0	
19	W.	9	9.40	7	4.1				5.30			3.50	31.1	53.0	
22	E.	8	14.48	10	9.5			1	54.02		1	53.21	29.9	55.0	
23	E.	9	21.79	10	18.5				55.71			54.90	30.1	38.0	
25	W.	9	39.52	7	34.4			2	5.12		2	3.32	29.0	44.0	

TABLE II.—Dunnofe, 1802. Point on the Limb 0° 50′ N.

Day of the Month.	Face.	Plumb-line.		Obfervation of the Star.		Zenith-Diftance in Revolutions.				Zenith-Diftance Reduced.			Barometer.	Thermometer.	
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	Above. °	Below. °
May 10	E.	10	15.52	13	48.1	0	50	3	32.75	0	53	30.10	29.0	—	45.0
11	W.	9	38.66	5	56.4				41.26			38.62	28.85	43.9	43.5
13	E.	8	47.30	12	81.4				34.10			31.45	28.85	36.5	38.0
14	W.	7	32.38	3	49.2				42.18			39.54	28.92	34.5	34.5
16	E.	9	40.0	13	15.2				34.20			31.55	28.82	35.5	36.5
June 11	W.	7	20.70	3	29.5				50.20			47.58	28.34	53.5	52.5
13	E.	9	36.35	13	20.3				42.95			40.31	28.79	52.5	52.3
14	W.	8	25.26	4	33.4				50.86			48.24	28.26	54.3	53.0
16	E.	9	48.33	14	37.4				45.07			43.44	28.75	59.5	60.0
17	W.	8	32.66	4	39.4				52.26			49.64	28.82	56.0	58.0
18	E.	11	32.77	15	17.9				44.13			41.50	28.8	52.0	51.0
20	W.	8	9.48	4	17.0				51.48			48.86	29.97	58.6	57.0
21	E.	11	52.92	15	40.0				47.08			44.45	28.83	56.0	55.5

TABLE III.—Clifton, 1802. Point on the limb 1° 55′ S.

Day of the Month	Face.	Plumb-line.		Obfervation of the Star.		Zenith-Diftance in Revolutions.				Zenith-Diftance Reduced.			Barometer.	Thermometer.	
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div	°	′	″	Inches.	Above. °	Below. °
July 20	W.	11	49.24	13	12.8	1	55	1	22.56	1	56	21.69	28.9	56.5	55.0
21	E.	7	23.81	5	53.7				29.11			28.26	28.5	53.0	52.2
22	W.	7	54.31	9	17.1				21.79			20.92	28.7	54.5	54.5
23	E.	3	46.15	2	18.9				27.25			26.39	29.0	56.1	56.1
26	W.	9	8.47	10	29.5				21.03			20.16	28.8	64.0	64.0
28	E.	9	35.56	8	9.6				25.96			25.11	28.8	56.2	57.3
29	W.	8	44.41	10	4.5				19.09			19.03	29.0	56.5	56.5
Aug. 1	W.	8	41.22	10	3.0				20.78			19.91	29.2	59.5	57.0
3	E.	9	7.59	7	40.3				26.29			25.43	29.1	68.0	64.5
5	E.	7	50.50	6	25.0				25.50			24.64	29.0	73.0	71.0
7	W.	9	7.55	10	24.6				17.05			16.18	28.9	64.2	65.2
12	E.	11	7.56	9	42.7				23.86			23.0	29.1	57.5	57.5
13	W.	8	12.48	9	29.4				16.92			16.04	29.3	63.0	61.2
17	E.	8	10.32	6	46.0				23.32			22.46	29.0	69.5	70.5
18	W.	8	32.97	9	48.5				15.53			14.65	28.8	70.0	70.1

Table IV.—Arbury-Hill, near Daventry, 1802. Point on the Limb 0° 40′ S.

Day of the Month.	Face.	Plumb-line.		Obfervation of the Star.		Zenith-Diftance in Revolutions.				Zenith-Diftance. Reduced.			Barometer.	Thermometer.	
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	Above. °	Below. °
Sept. 10	W.	8	53.85	11	6.4	0	40	2	11.55	0	42	9.76	28.2	51.5	54.0
11	E.	8	47.75	6	31.9				15.85			14.07	28.53	48.2	55.0
18	E.	9	46.65	7	28.7				17.95			16.17	28.8	70.3	72.3
19	W.	9	18.90	11	31.5				12.60			10.82	28.8	67.5	73.5
20	E.	9	1.78	6	42.8				17.98			16.20	28.8	68.3	71.4
22	E.	9	16.52	6	58.2				17.32			15.54	28.8	79.8	75.8
23	W.	8	9.97	10	20.5				10.53			8.74	28.8	67.5	65.3
24	E.	9	16.97	7	0.8				16.17			14.39	28.9	70.5	70.2
25	W.	9	16.0	11	27.6				11.60			9.81	29.1	74.0	75.2
26	W.	9	10.47	11	23.0				12.53			10.75	29.0	59.5	64.2
29	E.	9	17.50	7	0.8				16.70			14.92	29.1	64.0	69.5
30	W.	9	21.63	11	33.5				11.87			10.08	29.9	64.0	69.5
Oct. 1	E.	9	34.95	7	15.5				19.45			17.87	28.9	72.5	71.9
2	E.	9	25.33	7	7.0				18.33			16.57	28.8	71.0	75.0
3	W.	8	54.30	11	7.1				11.80			10.01	28.6	74.0	73.0

Table V.—Delamere Foreft, 1806. Point on the Limb 1° 40′ S.

Day of the Month.	Face.	Plumb-line.		Obfervation of the Star.		Zenith-Diftance in Revolutions.				Zenith-Diftance. Reduced.			Barometer.	Thermometer.	
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	Above. °	Below. °
May 30	W.	10	14.2	7	49.82	1	40	2	23.38	1	42	21.61	29.37	49.5	50.0
June 2	E.	4	45.3	7	14.10				27.80			26.04	29.67	51.0	51.5
4	W.	9	49.1	7	29.0				20.10			18.33	28.96	48.0	49.0
5	E.	4	39.4	7	5.0				24.60			22.84	29.17	51.5	51.0
7	W.	13	6.6	10	44.73				20.87			19.01	29.55	51.5	54.5
9	E.	5	20.9	7	44.68				23.78			22.01	29.67	62.0	63.0

Table VI.—Burleigh-Moor, 1806. Point on the Limb 3° 5′ S.

Day of the Month.	Face.	Plumb-line.		Obfervation of the Star.		Zenith-Diftance in Revolutions.				Zenith-Diftance Reduced.			Barometer.	Thermometer.	
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	Above. °	Below. °
July 6	W.	9	11.5	11	14.9	3	5	2	3.40	3	2	46.4	29.25	51.0	51.0
7	E.	11	19.9	10	32.47			1	46.43		3	14.47	28.95	54.5	54.5
10	E.	10	16.0	8	25.8				49.20			11.22	29.59	65.0	62.5
11	W.	5	47.3	7	43.92				55.62			5.18	29.29	56.5	55.0
16	W.	5	7.5	7	4.24				55.74			5.07	29.1	51.5	51.5
18	W.	6	1.5	7	55.13				53.63			6.18	29.25	59.0	56.0
19	E.	9	36.6	7	46.61				48.99			11.83	29.36	56.5	55.0

Besides these observations, various others were taken of different stars in Draco, Cygnus, Ursa Major, Hercules, Perseus, and Auriga, from an average of all which the final results were obtained; but before the true or *mean* zenith-distances can be exactly known, the *apparent* measures must be corrected by certain equations for *aberration, nutation, semi-annual solar equation, precession,* and *refraction;* the Tables proper for which are chiefly given under our article DECLINATION. It was deemed sufficient for our purpose in this place to confine ourselves to the consideration of the observations made on γ Draconis alone, which being a star of the second magnitude, and very near the zenith of London, and of the southern parts of England, was considered as the best object. We will therefore subjoin the reduction of the observations made on this star by way of illustrating their application in practical astronomy.

Reduction of the Observations contained in Table I.

	Face of Limb West.				Face of Limb East.			
		°	′	″		°	′	″
Greenwich Observatory, 1802.	April 16. - -	0	2	28.37	April 22. - -	0	2	19.05
	19. - -	0	0	29.92	23. - -	0	0	20.54
	25. - -	0	0	28.55	Mean E. - -	0	2	19.79
	Mean - -	0	2	28.94	Mean W. - -	0	2	28.94
					2)	0	4	48.73
Apparent Mean of both positions					=	0	2	24.36
And also, half the difference, or collimation					=			4.57
Then in Bode's Catalogue Dec. N. of γ Draconis, 1801					=	51	31	5.
Subtract for annual diminution .7 + .3					—			1.
True declination					-	51	31	4.
And 2′ 24″.36 + 0.03″ (sum of Equations) true zenith-distance					-		2	24.39
The true latitude of Greenwich Observatory, as deduced from γ Draconis					=	51	28	39.61

When the reductions are thus made for the observations taken at the other places, the zenith-distances and corresponding latitudes will stand thus, *viz.*

	Zenith Distance.				North Latitude.		
Dunnose	1°	50′	5.24″	N.	50°	37′	7″.36
Clifton	1°	56	26.64	S.	53	27	30.64
Arbury-Hill	0	42	22.75	S.	51	15	26.75
Delamere For.	1	42	18.09	S.	53	13	19.09
Burleigh Moor	3	3	19.09	S.	54	34	20.09

In obtaining the latitudes of the two last places, the declination of γ Draconis is diminished 3″ to bring it to the year 1806, and in all the cases where S is annexed to the zenith-distance, it is *added* to the declination. The reductions are made to the first of January of the respective years, and the latitudes come out very nearly the same as those determined from terrestrial measurement, and also from an average of all the observed stars.

"From the observations made at the station in Delamere forest with the zenith-sector in 1806, combined with those at Dunnose, 1802, taken with the same instrument," says the author of the Survey, "it is found, that the difference in latitude of those is 2° 36′ 12″.2 (by γ Draconis alone in our examples 2° 36′ 11″.73), making a difference of 1″ between the calculated and observed amplitudes, which, setting aside the consideration of the spherical figure of the earth, is at the rate of $\frac{4}{10}$ths of a second in one degree. Perhaps, under the consideration of each meridianal line being obtained independently of the other, and admitting that neither of them can be measured with perfect accuracy, together with the chances of the amplitudes being in some small degree either in excess or defect, we may consider the result as sufficiently consistent and satisfactory, and may take 60823 fathoms, in latitude 52° 34′, or the centre of England, as the length of 1°." Trigonometrical Survey, vol. iii. p. 332, &c.

ZENITH-*Micrometer* is an instrument of very recent date, and is scarcely yet known to the generality of astronomers. It differs from the zenith-sector in this respect; that the measures taken with it are all taken within the tube of the telescope, whereas those taken by the zenith-sector are all external: consequently the range of the zenith-micrometer's scale is confined to the extent comprised within the field of view, which will always be inversely as the magnifying power of the glasses used; hence the greater the power of the telescope, the smaller the number of stars that will pass within the range of the micrometer-screw; but then corresponding accuracy may be expected from the great powers and delicate construction of modern micrometers; and what is wanting in the extent of the scale will be made up by superior precision. The telescope, which constitutes the basis of the zenith-micrometer, may be either of the reflecting or refracting construction; and within a short space of time one of each description has been constructed; the former by Troughton, for the Greenwich observatory, and the latter by Dollond, for the use of those geodæsic commissioners, who are employed by the English government to ascertain the proper line of demarcation across the American lakes. We will give a short account of each of these instruments, such as will enable our readers to form an opinion of their respective merits, as prototypes for future imitation.

Zenith-Micrometer by Troughton.—It is probable that the first

first idea of a zenith-micrometer occurred to Mr. Troughton, and certain that he was the first who executed one, and gave it its name. It was in 1806 that he proposed it to Dr. Maskelyne, and in 1812 that he erected it at the Royal Observatory, as an appendage to the mural circle.

The telescope of this instrument is a Newtonian reflector, the tube of which forms the vertical axis, through which axis a plumb-line passes centrically from end to end; and, therefore, is not made to vibrate by turning. The tube or axis, 10 feet long, and 5 inches diameter, at the lower end terminates in a pivot, while the upper end is received by a right angle, against the sides of which it is gently pressed by two springs; contrivances which produce free and steady azimuthal motion.

All the zenith instruments require for collimation two positions, which in the sectors are called *face east* and *face west;* two at 180° distance from each other are equally necessary for the micrometer, and in that under consideration are indicated by the contact of stops, without regarding any divisions.

The large mirror at the lower end, as well as the pivot, are perforated, in order that the plumb-line may pass freely through them, the latter sustaining the plummet in a water vessel several inches below. The axis of the mirror is somewhat inclined to that of the tube, for the purpose of placing the plane mirror out of the way of the plumb-line, which latter, as before observed, occupies the centre. The rays of light, thus rather obliquely reflected up the tube, are turned into a horizontal direction by the plane mirror, and come to a focus a little beyond the side of the tube, where, with appropriate adjustments, is fixed a double micrometer for measuring zenith-distances.

When the instrument is stopped with the micrometer toward the south, one of the moveable wires is made to bisect a star a little before it comes to the centre of the field of view; then the instrument is turned to the opposite stop with the micrometer towards the north, which may be done in three seconds, and then the other moveable wire is made to bisect the star. It is evident now, that the opening between the wires is double the zenith-distance of the star, and if the axis was truly vertical, the middle between them is the point zenith. The revolutions of the screws are counted in the field of view, and the parts to the third decimal figure read off upon the micrometer heads, which revolutions and parts are to be reduced to angular measure.

The plumb-line is suspended from a fixed point at the upper end, and near the lower end is a rectangular arrangement of microscopes with adjustments, which, together with the adjustments of the pivot, accomplish the means of bringing the axis and plumb-line coincident with each other, and of assuring the vertical position of the former.

The conception of this instrument was not confined to a reflecting telescope, it was seen that a refracting one would succeed equally well: in the latter case, the pivot at the lower end must be perforated to receive the eye-glass, and the plumb-line should be exterior to the main tube, but inclosed in a smaller one to protect it from the action of the wind. In the case of the Greenwich instrument, of which the foregoing is a description, the reflector was preferred on account of its allowing the central position of the plumb-line, which, being free from vibration, shortens the time required for adjustment; a consideration indeed of very little value; for it is now known (but was not then) that instruments properly constructed, and used with care, which they now are at our national establishments, seldom or never want re-adjustment. A better cause for adopting the reflector was, that the horizontal view is more easy than the vertical one, especially as in the former the hands and whole body are unembarrassed, and fit for action. But whichever construction of the telescope is employed, we know that Troughton considers the zenith-micrometer as one of the most elegant of his inventions.

Zenith-Micrometer by Dollond. — The zenith-micrometer which is represented in *Plate* XXXIII. by *figs.* 3, 4, 5, and 6, has great advantages in the simplicity of the construction and use, that former instruments for the same purpose do not possess, and is portable: the plan was proposed by Mr. Pond, the astronomer royal, and the instrument executed by Mr. Dollond for transatlantic measurements. It is drawn from a scale of two inches to the foot, and is represented without a stand or support. It can be applied to either, as occasion may require. The component parts are these; *viz.* an achromatic refracting telescope A A, (*figs.* 3, 4.) of 42 inches focal length, with an aperture of $2\frac{3}{4}$ inches; a micrometer B, with two screws, each moving a separate wire through the field of view, which is extended to two degrees. The transverse axis C is 18 inches long, and glazed for a telescope, with cross wires that adjust, so that when the principal telescope A is taken out, (and for which there is a provision,) the line of collimation may be truly adjusted to the pivots, and when replaced will be correctly at right angles to the principal telescope. The use of the axis being formed into a telescope, is, for the purpose of placing the instrument correctly in the meridian, by a mark that must be found to the east, and also by another to the west, so that when the star has been observed with one of the micrometer wires, and the instrument is changed for the purpose of observing the same star with the other micrometer wire, it may be correctly replaced, the mean of the two observations being the correct zenith-distance. The instrument is also furnished with a plumb-line D, and with a dot at E, the image of which is brought to the place of the plumb-line by a lens; this is known by the name of the *ghost* adjustment. The plumb-line is suspended from a piece at F. The two screws G G are used for bringing the dot carried by the telescope, to coincide with the plumb-line; and is observed to be so by the lens at H. This contrivance affords one of the greatest advantages of the instrument, as it enables the observer, at the moment before he observes the conjunction of the star with the micrometer wire, to ascertain the correct position of the instrument by the plumb-line; for the correctness of the observation will depend on the accuracy with which the plumb-line is made to coincide with the dot; and by this method the *error* of *division* is *done away.* The level (*fig.* 6.) is used for levelling the axis, and the circular piece (*fig.* 5.) with the Ys *a a* attached, in which the pivots of the transverse axis rest, may be applied to a mahogany-framed stand, or on a stone pier, or bracket: it is represented as it was made for a mahogany stand (which had adjusting screws at the feet); it consists of two strong brass plates, and is furnished with a circular motion for bringing the instrument into the meridian, which motion is given by a pinion *b*; and it is made fast by the four screws *c*, *c*, *c*, *c*. The two adjusting screws G G, *fig.* 3. must also be attached to a bracket or framed piece in the stand; and the support for the water, in which the plummet is immersed, may also be applied to this bracket. The wires are illuminated through the axis in the same manner as in the transit-instrument. The value of the micrometer-screws is to be found in the usual manner, and reduced into seconds.

The foregoing are the distinguishing properties of this instrument,

instrument, and as the method of using it may be understood sufficiently from what we have said of the zenith-sector, from which it differs only in the small range of its scale, it will be unnecessary to give any further explanation of either its adjustments or practical application.

Other Instruments.—Besides the zenith-sectors and zenith-micrometers, which we have above described, there are other instruments, which may be used as substitutes for these, at the same time that they may be used for their own respective purposes. Of these, the transit-circles of large dimensions, particularly those which move with their pivots supported by stone piers, claim our principal notice. As the professed use of these circles is to ascertain both right ascensions and declinations at the same time, and as zenith-distances are only complements of altitudes taken in any latitude, it is obvious, that those instruments that measure altitudes accurately, at all elevations, will also measure zenith-distances, or their complements; and in fact, the divisions are now numbered in such way, that altitudes and zenith-distances are read alternately in the reversed positions. Of this description is the excellent circle of Mr. Groombridge at Blackheath; but the large circle at Greenwich, not having a plumb-line or level used, nor being capable of reversion, is not of the same class; though a very superior instrument for its own purpose of measuring polar distances from the exact polar point, without any reference to latitude, altitude, or zenith-distance.

We have also before us an 18-inch transit-circle with a $3\frac{1}{2}$-feet telescope, very lately made by Mr. Thomas Jones, of Charing-Cross; the axis of which is supported by a cast-iron frame, that very conveniently admits of measures being taken in or near the zenith, as well as in any other degree of elevation. This instrument comprises many new and useful contrivances, but they cannot be described under this head, consistently with our general plan of dividing our subjects.

ZENITH is a word used by some writers to express the first appearance of the menses in young women.

ZENKABAD, in *Geography*, a town of the Arabina Irak; 22 miles S. of Sherban.

ZENKOV, a town of Russia, in the government of Tchernigov; 140 miles S.E. of Tchernigov. N. lat. 50°. E. long. 34° 14′.

ZENN, a river of Franconia, which runs into the Rednitz, near Vacha, in the margravate of Anspach.

ZENN. See LANGENZENN.

ZENNAR, the name of a mystical thread worn by Brahmans, and by many individuals of other tribes of Hindoos. So prolix and minute are the authors of the Ordinances of the Hindoos, that rules for almost every occurrence of life, however trifling, have been laid down. Not that any thing connected with the zennar has been deemed trifling by those who ordained it, by those who wear it, or those who revere it. On the contrary, the individuals to be so distinguished, the mode of manufacturing the sacred article, and its investiture, with many particulars, have occupied the attention of lawgivers, and are attended to with great respect by their obedient followers.

Brahmans affect to consider the zennar as of highly mysterious and sacred import, and do not consider an individual as fully a member of his tribe until he have assumed this holy emblem. A Brahman should be invested with it at the age of eight years, by the hands of his father, who, with his Guru, or spiritual preceptor, twists that first put on. A Kshetriya receives it at eleven, from a Brahman. A Vaisya at twelve years of age. A Sudra is on no account permitted to wear it. A description of these four grand divisions, comprising the whole race, will be found under SECTS *of Hindoos*.

The zennar must be made by a Brahman: it is composed of three threads, each measuring ninety-six hands, twisted together, and folded into three; then twisted again so as to consist of nine threads: these are again folded into three without twisting, and each end fastened with a knot. It is put over the left shoulder next the skin, and hangs down the right thigh as low as the fingers can reach. Of these cords a Brahman wears four; the other privileged tribes but three. Some writers call this the Brahmanical, or priestly, or sacerdotal thread; but not, it would appear, in strict correctness; it not being confined to the priestly tribe, but worn, as we have seen, by three out of the four sects of Hindoos.

In the Institutes of Menu (see MENU), c. 11. v. 36. the revered legislator ordains, that "in the eighth year from the conception of a Brahman, in the eleventh from that of a Kshetriya, and in the twelfth from that of a Vaisya, let the father invest the child with the mark of his class."

The two next verses allow, on particular occasions, the assumption of the sacrificial thread, as it is often called, in the fifth, sixth, or eighth years respectively; or it may, in like manner, be delayed until the individual be double the age mentioned in verse 36. "After that, all youths of these three classes, who have not been invested at the proper time, become outcasts, degraded from the Gayatri, and contemned by the virtuous," v. 39. Of the Gayatri, see under our article O'M.

In ancient books, the three first classes, from being thus invested with this sacrificial thread, are called *twice born*; a regeneration being effected by this mystical second birth. But it has been thought, that in later times, the Brahman only has the advantage of being thus *born again*. The term *twice born* is very common; a *third* birth is sometimes mentioned: this, we believe, is at the decease, or the burning of the body. "The first birth is from a natural mother; the second, from the ligation of the zone; the third, from the due performance of the sacrifice: such are the births of him who is usually called twice born, according to a text in the Veda. Among them, his divine birth is that which is distinguished by the ligation of the zone and sacrificial cord; and in that the Gayatri is his mother." Menu, ii. 169, 170.

This cord is never taken off; even when sleeping and bathing, it is worn and disposed of in a particular manner. When worn out, it is committed to the water with due and appropriate ceremony, and another is as duly put on. It is seen on the most ancient of Hindoo sculptures, and on many of the figures; for instance, in the cavern temple at Elephanta. (See MAHAKALA.) It has several other names; among them Janwi, or Jahnuvi, Maurvi, &c. The latter is applied to the cord of the military tribe, being made from the leaves of a species of hyacinth, called murva, of which bow-strings are also made: the Brahman's cord is made of cotton. The name Jahnuvi given to this sacred, triple, mystical, regenerating thread, has been derived from Jahnu, an ascetic, who, in a very extravagant way, gave a second birth to the equally sacred, triple, mystical, regenerating river Ganga (the Ganges), which is hence called Jahnuvi. Of this we have taken some notice under JAHNU; and of the triple union of the Ganga, and other sacred rivers, under TRIVENI.

Brahmans, and their enthusiastic followers, are very mystical concerning regeneration, and have divers modes of effecting the second birth, in cases where the purity derived from the ligation of the zone, or investiture with the sacrificial thread,

thread, hath been loſt by the contaminations of unlawful acts, as from accidental defilements. Of this, ſee under our article YONI.

ZENO, in *Biography*, called the *Eleatic*, in order to diſtinguiſh him from Zeno the Stoic, was a native of Elea, in Magna Græcia, and ſaid to have been the adopted ſon of Parmenides, whoſe diſciple he was, flouriſhed about the year 463, B.C. and choſe to live in his native city rather than at Athens, for the ſake of maintaining his independence. He is repreſented as a zealous friend of civil liberty, and as having loſt his life in his oppoſition to a tyrant. It is ſaid, that having been detected in a conſpiracy againſt the petty tyrant of the place of his nativity, he endured the moſt cruel torments, becauſe he would not betray his accomplices; and that at length his countrymen, rouſed by his fortitude, fell upon the uſurper and ſtoned him to death. To him the invention of the dialectical art has been erroneouſly aſcribed.

According to Ariſtotle, Zeno taught that nothing can be produced either from that which is ſimilar or diſſimilar; that there is only one being, and that is God; that this being is eternal, homogeneous, and ſpherical, neither finite nor infinite, neither quieſcent nor moveable; that there are many worlds; that there is in nature no vacuum; that all bodies are compoſed of four elements, heat and moiſture, cold and dryneſs; and that the body of man is from the earth, and his ſoul an equal mixture of theſe four elements. He argued with great ſubtlety againſt the poſſibility of motion. If Seneca's account of this philoſopher deſerves credit, he reached the higheſt point of ſcepticiſm, and denied the real exiſtence of external objects.

Upon the whole, his ſentiments ſeem to have been ſo fluctuating and unſtable, and his method of arguing ſo verſatile, that it is not certain whether he allowed or denied a properly divine nature. Moſheim, not improperly, applied to the doctrine of Zeno the words of Terence:

"—— Incerta hæc, ſi tu poſtules
Ratione certa facere, nihilo plus agas,
Quàm ſi des operam, ut cum ratione inſanias."

"Things thus uncertain, if by reaſon's rules
You'd certain make; it were as wiſe a taſk
To try with reaſon to run mad." COLMAN.

Bayle depreciates the practical philoſophy of Zeno, on account of his vindication of the warmth with which he reſented reproach, by ſaying, "If I were indifferent to cenſure, I ſhould alſo be indifferent to praiſe." His works, though unknown to the moderns, were held in high eſtimation among the ancients. Diog. Laert. Bayle. Brucker by Enfield, vol. i.

ZENO, the founder of the *Stoic* ſect, was born about the year 366, before Chriſt, and died, as it is ſaid, in the 1ſt year of the 129th Olympiad, or 264 B.C. For an account of him, ſee the article STOICS.

ZENO, Roman emperor of the Eaſt, was a deſcendant of an Iſaurian family of diſtinction, and at firſt bore the name of "Traſcaliſſæus." Being a commander of the Iſaurian troops in the ſervice of Leo I., he married Ariadne, a daughter of the emperor, who created him a patrician, and raiſed him to the chief command of all the armies in the Eaſt. Upon the death of Leo in the year 474, the empire was tranſmitted to his grandſon by Zeno and Ariadne, and Zeno, by the influence of the dowager-empreſs Verina, was appointed his colleague, and when the young emperor died, Zeno poſſeſſed the whole imperial power. But Verina, being incenſed by his ſcandalous conduct, formed a conſpiracy againſt him, ſo that Zeno was obliged to ſeek refuge, firſt at Chalcedon, and afterwards in Iſauria, his native country. Baſiliſcus, the empreſs's brother, who had aſſumed the empire, became ſo unpopular, that Zeno was reſtored, and the degraded emperor periſhed in priſon. About this time the weſtern empire terminated; and Zeno, receiving deputies from the Roman ſenate, who recognized Conſtantinople as the ſeat of univerſal empire, and requeſted the title of patrician for Odoacer, proclaimed king of Italy, was flattered with the title of ſole Roman emperor, and commenced an amicable correſpondence with Odoacer. The remaining period of his reign was both turbulent and inglorious. The inſurrections againſt his government were numerous, and his temper, which was naturally ſevere, was thus rendered more hoſtile and cruel towards thoſe whom he conſidered as his enemies. The irritability of his diſpoſition proved eventually a collateral cauſe of his death, by aggravating a diſorder in his bowels, which proved fatal in the year 491, at the age of 65, after a reign of ſeventeen years and three months. His widow Ariadne married very ſoon after his death. His reign was famous for the confeſſion of faith, called the HENOTICON, or *Henoticum*, (which ſee.) Gibbon's Hiſt. Rom. Emp. vols. vi. vii. viii.

ZENO, in *Geography*, a river of Italy, which runs into the Taro, oppoſite Fornovo, in the duchy of Parma.

ZENOBIA, *Queen*, in *Biography*, was a native of Syria, in the third century, who claimed deſcent from the Macedonian kings of Egypt. This female was celebrated for the beauty of her perſon, the harmoniouſneſs of her voice, her mental talents and literary acquirements, and her diſtinguiſhed heroiſm and valour, as well as her modeſty and chaſtity. "Her manly underſtanding," ſays Gibbon, after recounting her perſonal beauties and excellencies, "was ſtrengthened and adorned by ſtudy. She was not ignorant of the Latin tongue, but poſſeſſed in equal perfection, the Greek, the Syriac, and the Egyptian languages: ſhe had drawn up for her own uſe an epitome of oriental hiſtory, and familiarly compared the beauties of Homer and Plato, under the tuition of the ſublime Longinus." She was allied by marriage to Odonatus, king of Palmyra, and delighted in thoſe exerciſes of war and the chace to which he was devoted. Many of his victories have been aſcribed to her military ſkill and valour. After the death of her huſband, about the year 267, ſhe aſſumed the ſovereignty of the Eaſt, and governed with equal vigour and policy; ſo that by her ſucceſs in warlike expeditions, as well as by the wiſdom and firmneſs of her adminiſtration, ſhe aggrandized herſelf in Aſia, and her authority was recognized both in Cappadocia and Bithynia, when Aurelian ſucceeded to the Roman empire. Envious of her power, and determined to diſpoſſeſs her of ſome of the rich provinces that were comprehended within the extent of her dominion, he marched at the head of a powerful army to Aſia, and having defeated the queen's general Zabdas, near Antioch, ſhe retreated to Emeſa, whither ſhe was purſued by Aurelian. Under the walls of that city another engagement with Zenobia, which was commanded and animated by herſelf, took place, in which the emperor was again victorious. The queen, thus unfortunate, withdrew the relics of her vanquiſhed forces to Palmyra, her capital; and was purſued thither by Aurelian. The favourable terms that were offered to Zenobia being refuſed, the city was beſieged; which, after long reſiſtance, the queen determined not to ſurrender; but as ſhe apprehended famine within the walls, ſhe mounted a ſwift dromedary, and haſtened towards the Euphrates, with a view of ſeeking an aſylum in the Perſian territories. But being overtaken in her flight, ſhe was brought back to Aurelian, who

who received her with a ſtern countenance, and queſtioned her how ſhe could dare to reſiſt the emperors of Rome. She replied, "Becauſe I could not acknowledge as ſuch a Gallienus and others like him; but I recognize by that title you who know how to conquer." At Emeſa, the fate of Zenobia was ſubmitted to the judgment of a tribunal, at which Aurelian preſided; and the Roman ſoldiers demanded her death. She, in a manner unworthy of her former fame, ſaved her own life by throwing the blame of her reſiſtance on her miniſters and counſellors; Longinus was one of theſe, who, with ſeveral others, was put to death, in the year 273.

Zenobia was reſerved to grace the triumph of Aurelian; and on the appointed day ſhe preceded, on foot, a magnificent chariot, which ſhe had deſigned in the days of her proſperity for a very different kind of entry into Rome. She was encircled, it is ſaid, with chains of gold, and almoſt ſunk under the load of jewels with which ſhe was adorned. Afterward ſhe was treated with humanity by the victor; and had aſſigned to her an agreeable reſidence near the Tiber, where ſhe paſſed the remainder of her days as a Roman matron. Whether ſhe contracted a ſecond marriage with a Roman ſenator, as ſome have affirmed, is uncertain; but however this be, her ſurviving ſon Vhaballat withdrew into Armenia, and poſſeſſed a ſmall principality granted to him by the emperor, and her family was not extinct in the fifth century. Gibbon's Hiſt. of Rome, vol. ii.

Zenobia, *Zelebi*, in *Ancient Geography*, a town of Aſia, in the Euphratenſis, upon the banks of the Euphrates, five miles from fort Mambri, and on this ſide of the ſmall town of Sura. According to Procopius, it was founded by Zenobia, wife of Odonatus, prince of Palmyra. After it had been ruined, Juſtinian re-eſtabliſhed it, and re-peopled it, and made it one of the bulwarks of the empire. After having rebuilt the town and fortified it, he embelliſhed it, conſtructing magnificent churches, public baths, galleries, and lodgments for the ſoldiers. It was ſituated S.E. of Nicephorium.

Zenobia, a place of Italy, near the palace of Adrian, aſſigned to queen Zenobia for her reſidence.

ZENOBII Insulæ, the name of ſeven iſlands in the Indian ocean, upon the coaſt of Arabia Felix, at the entrance of the Sathalite gulf. Ptolemy.

ZENODOTIUM, a town of Aſia, in Oſrhoené, in the vicinity of Nicephorium, according to Appian. Steph. Byz. This town, ſays Plutarch, was forcibly taken by Craſſus, who ruined it, and ſold the inhabitants by auction.

ZENONIS Chersonesus, a town mentioned only by Ptolemy, and placed by him in the Tauric Cherſoneſus, along the weſtern coaſt of the Palus Mœotis. M. Peyſonnel thinks this was not a town, but an iſthmus, called at preſent Zeniſké.

ZENSON, in *Geography*, a town of Italy, in the Treviſan; 9 miles E.N.E. of Trevigio.

ZENSUS, in *Arithmetic*, a name which ſome authors give to a ſquare number, or the ſecond power.

The higher powers they call *zenſizenſus*, *zenzicubus*, *zenſizenzenſus*, *zenſurdeſolidus*, &c. See Power.

ZENTA, in *Geography*, a town of Hungary, on the river Theys; memorable for a ſignal victory obtained, in the year 1697, by prince Eugene, over the Turks, commanded by the emperor Muſtapha II. in perſon: 20,000 Turks were killed, 10,000 wounded, and 3000 taken priſoners; 52 miles N. of Belgrade.

Zenta, a diſtrict of Dalmatia, on the confines of Albania.

ZENTILMANDAIK, a town of Aſiatic Turkey, in Natolia; 8 miles N. of Eregri.

ZENUPH, in the *Jewiſh Antiquities*, a kind of tiara worn by the kings of Judah. See Cidaris.

ZEOBID, in *Geography*, a town of the Arabian Irak, on the Euphrates; 28 miles S. of Bagdad.

ZEOLITE, in *Mineralogy*, a mineral ſo named by Cronſtedt, from the Greek word ζεω, *to foam*, on account of its intumeſcing and foaming very much before the blow-pipe. Haüy makes two diſtinct ſpecies of the zeolite, which he denominates meſotype and ſtilbite. Werner makes four ſub-ſpecies of zeolite, which he calls mealy zeolite, fibrous zeolite, radiated zeolite, and foliated zeolite. Beſides this he makes zeolite a generic name, placing it at the head of what he calls the zeolite family, in which arrangement he is followed by profeſſor Jameſon, who claſſes with the zeolite family the following minerals: prenhite, (ſee Prenhite,) zeolite, apophylite, cubicite, called by Haüy analcime, chabaſite, croſsſtone, laumonite, dipyre, natrolite, and wavellite. (See Wavellite.) In the claſſification of ſpecimens at the Britiſh Muſeum, theſe minerals, ſo nearly allied in chemical compoſition, and in many of their external characters, are arranged together under the appropriate denomination of zeolitic ſubſtances, by which the confuſion incident on making the ſame word repreſent both a genus and ſpecies is avoided. Theſe ſubſtances, except wavellite, are compoſed of ſilex, alumine, lime, or an alkali, and a conſiderable portion of water. To the latter, they owe the property of intumeſcing before the blow-pipe, that many of them poſſeſs. Some of theſe minerals form a jelly when diſſolved in acids. Zeolitic minerals occur principally in the cavities of volcanic and baſaltic rocks. Of the different members of the zeolite family, prenhite has been already deſcribed. (See Prenhite.) Zeolite, compriſing mealy zeolite and fibrous and radiated zeolite, are the various meſotypes of Haüy, mealy zeolite being the *meſotype alterée aſpect terreux* of the French mineralogiſt. This mineral is white, inclining to yellowiſh, greyiſh, or reddiſh, and is ſometimes red. It occurs maſſive, and kidney-ſhaped, and corrolloidal. Sometimes it forms a cruſt over other zeolites. The luſtre is dull or feebly glimmering: it is opaque, very ſoft, and rather ſectile; it has an earthy fracture, ſometimes inclining to fibrous. It is very light, and eaſily frangible, and feels rough and meagre. It appears to be zeolite in a decompoſing ſtate. It intumeſces before the blow-pipe, and forms a jelly with acids. The conſtituent parts are,

Silex	60
Alumine	15.6
Lime	8
Oxyd of iron	1.8
Loſs by expoſure to heat	11.6
	97

Fibrous Zeolite, *Meſotype*, Haüy, is of a ſnow-white colour, paſſing to greyiſh, yellowiſh, or reddiſh-white, and ſometimes into red and yellowiſh-grey, yellowiſh-brown, or ochre-yellow. It occurs maſſive, in kidney-ſhaped balls, and in capillary cryſtals. The external ſurface of the kidney-ſhaped varieties is rough and dull; internally it is ſtrongly glimmering, paſſing into gliſtening, and the luſtre is pearly: it is faintly tranſlucent. The ſtructure of this mineral is fibrous, either diverging on one ſide or ſtellular, and paſſes from delicately fibrous to coarſe or to narrow radiated. It is brittle, breaking into ſplintery or wedge-ſhaped

ſhaped fragments; it yields eaſily to the knife. The ſpecific gravity is from 2.158 to 2.197. Before the blow-pipe it intumeſces, and forms a jelly with acids. It may be diſtinguiſhed from needle zeolite by its inferior luſtre, fibrous ſtructure, and low degree of tranſparency and hardneſs, and alſo by its want of regular cryſtallization.

Needle Zeolite, Meſotype, Haüy; and *priſmatic meſotype* of ſome mineralogiſts. Its colours are, greyiſh, yellowiſh, or reddiſh-white: it occurs both maſſive and cryſtallized. The cryſtals are acicular-rectangular four-ſided priſms, terminated by low four-ſided pyramids, the faces of which are ſet on the lateral planes of the priſm. Sometimes there are only two terminating planes, forming an acute bevelment, ſet on obliquely. The rectangular priſm is ſometimes truncated on the edges, forming an octahedron, with four large and four ſmall planes. The lateral planes of the cryſtals are longitudinally ſtriated, but the acuminating planes are ſmooth. Sometimes the cryſtals are diverging, and ſometimes promiſcuouſly aggregated. The cryſtals are externally ſhining or ſplendent, internally gliſtening; the luſtre is vitreous, inclining to pearly. The ſtructure is lamellar, with joints parallel to one of the ſides of the priſm; alſo at right angles to the axis, and parallel to the two diagonals of the priſm. Of theſe, the firſt cleavage only is generally viſible. The croſs fracture is imperfectly conchoidal; the luſtre between vitreous and pearly. It is tranſlucent or tranſparent, with double refraction. It yields to the knife, but ſcratches calcareous ſpar, and is brittle. The ſpecific gravity varies from 2.17 to 2.27. This mineral, like the preceding, intumeſces before the blow-pipe, and gelatinizes with acids. It becomes electric by heat; the extremity of the cryſtal, terminated by a pyramid or bevelment, ſhews poſitive the bottom of the cryſtal negative electricity. According to Vauquelin, the conſtituent parts of meſotype are,

Silex - - - -	50.24
Alumine - - - -	29.50
Lime - - - -	9.46
Water - - - -	10
	99.2

Needle zeolite, or meſotype, is diſtinguiſhed from radiated zeolite, or ſtilbite, by its vitreous luſtre, diſtinct priſmatic concretions, and greater tranſparency and brittleneſs. The latter has alſo more of a nacry luſtre.

Radiated Zeolite, Stilbite, Haüy, is generally of a yellowiſh or greyiſh-white colour, and rarely paſſes into reddiſh-white or red. It occurs maſſive in angular pieces, and globular, and alſo cryſtallized in broad, rectangular, four-ſided priſms, rather acutely terminated by four planes ſet on the lateral edges of the priſm. Of theſe planes two adjoining ones are more inclined to the axis of the priſm than the other two. The ſummits of the terminating planes are ſometimes more or leſs deeply truncated. Sometimes the priſm is ſo thin as to form a long ſix-ſided table, bevelled on the ſhorter terminal planes. The cryſtals are aggregated in diverging radii, and frequently ſo cloſely joined to each other, that the pyramidal terminations of each cryſtal are only viſible. The broader lateral planes of the cryſtals are ſmooth, and the ſmaller longitudinally ſtriated. The ſtructure is lamellar, with joints in one direction, parallel to the axis of the priſm. The ſurfaces of the broader lateral planes are ſplendent and pearly; internally the luſtre is more or leſs ſhining, and is pearly. The cryſtals are tranſlucent, or ſemi-tranſparent. The diverging radii of the aggregated cryſtals are more or leſs broad, paſſing from fibrous to foliated. It is brittle, and the fragments are wedge-ſhaped and ſplintery. Stilbite ſcratches calcareous ſpar. The ſpecific gravity of this mineral is from 2.13 to 2.16. It intumeſces before the blow-pipe, yielding a phoſphoric light: it becomes white when laid on a glowing coal: it does not gelatinize with acids. The conſtituent parts are,

Silex - - - - -	40.98
Alumine - - - - -	29.09
Lime - - - - -	10.95
Water - - - - -	16.50
	97.52

Foliated Zeolite, Stilbite, Haüy.—The colours of this mineral are nearly the ſame as thoſe of the preceding, being chiefly yellowiſh and greyiſh-white, and rarely milk-white, ſnow-white, reddiſh-white, or red; it ſometimes is yellowiſh-grey, and pinchbeck-brown. It occurs both maſſive, diſſeminated, globular, amygdaloidal, and cryſtallized. The form of the cryſtals is a low, very oblique, four-ſided priſm; ſometimes truncated on the acute lateral edges, and alſo on the angles of the acute lateral edges. Sometimes all the angles are truncated. It occurs alſo in low ſix-ſided priſms, and equi-angular ſix-ſided tables; alſo in eight-ſided priſms. The cryſtals are generally ſmall; the lateral planes are tranſverſely ſtriated, and the terminal planes are ſmooth. It has a pearly luſtre, which is either ſhining or ſplendent. The pinchbeck-brown variety has a ſemi-metallic luſtre. It has a foliated and ſlightly curved ſtructure, with a ſingle cleavage, parallel with the terminal planes of the priſms. Sometimes a conchoidal croſs fracture may be obſerved. It is brittle, and the fragments are angular and blunt-edged, and ſometimes tabular. The maſſive varieties are ſtrongly tranſlucent; the cryſtals are tranſlucent, ſemi-tranſparent, or tranſparent. It yields to the knife, but ſcratches calcareous ſpar. The ſpecific gravity of this mineral is 2.2; and, like the preceding mineral, it intumeſces and melts before the blow-pipe, giving out a phoſphoric light: it does not form a jelly with acids. According to Meyer, the conſtituent parts are,

Silex - - - - -	58.3
Alumine - - - - -	17.5
Lime - - - - -	6.6
Water - - - - -	17.6
	100

According to Vauquelin,

Silex - - - - -	52.6
Alumine - - - - -	17.5
Lime - - - - -	9
Water - - - - -	18.5
	97.6

All theſe zeolitic ſubſtances, claſſed as meſotype and ſtilbite by Haüy, paſs by imperceptible gradations into each other, and occur, as we have before obſerved, in baſaltic and volcanic rocks.

The eaſy fuſibility of zeolites was at one time regarded as rendering their occurrence in volcanic rocks a ſubject of difficult explanation; but the experiments of ſir James Hall, referred to under SYSTEMS *of Geology,* demonſtrate the

the poſſibility of cryſtalline arrangements taking place under compreſſion in ſubſtances that would be diſſipated by heat under the common preſſure of the atmoſphere. It is probable, however, that many zeolitic ſubſtances which occur in baſalt or lava have been infiltrated into the cavities at a later period, and are even forming at the preſent day in ancient lavas and baſalts.

Some of the minerals claſſed with the zeolite family have been deſcribed in our preceding volumes. See APOPHYLITE, or ICTHYOPTHALMITE.

Analcime, or *Cubicite*, formerly called by Werner *cubic zeolite*, is generally white, ſometimes reddiſh-white, or red. It occurs ſometimes maſſive, but more generally cryſtallized in perfect cubes, or with the angles more or leſs deeply acuminated, or in twenty-four-ſided cryſtals, like thoſe of the leucite, having each of the ſides equal and ſimilar trapeziums. The ſtructure preſents ſlight indications of cleavage, parallel with the ſides of a cube. The fracture is compact and flatly conchoidal, paſſing into fine-grained, uneven. It is tranſlucent, ſemi-tranſparent, or tranſparent, and has a ſhining luſtre, between vitreous and pearly. It is ſufficiently hard to ſcratch glaſs, but is eaſily frangible. The ſpecific gravity of cubicite is 2.44. It becomes electric by rubbing. Before the blow-pipe it melts into a tranſparent glaſs. According to Vauquelin, the conſtituent parts of this mineral are,

Silex	58
Alumine	18
Lime	2
Soda	10
Water	8.5
	96.5

This mineral occurs moſt frequently in cavities in rocks of the trap formation, accompanied with zeolite; but it is ſometimes found in metallic veins in ſchiſtoſe rocks, accompanied with various ores, and with calcareous ſpar and quartz. The name *analcime* was given to it by Haüy, ſignifying a body with little power, on account of the feeble electricity excited in it by friction.

Chabaſite, *Chabaſie*, Haüy, is nearly allied to cubicite, and was formerly claſſed with it. The cryſtallization is different; the form is not perfectly cubical, but ſlightly rhomboidal, the angles of the rhomboid being 94° and 86°, either perfect, or with the obtuſe lateral edges truncated, and ſometimes both the ſix obtuſe lateral edges and ſix obtuſe angles are truncated. The cryſtals are tranſparent or tranſlucent. The luſtre is vitreous, and externally ſplendent, internally gliſtening; the fracture is imperfectly conchoidal, or fine-grained, uneven. It ſcratches glaſs a little. The ſpecific gravity of this mineral is 2.7. It is fuſible into a white ſpongy enamel. According to Vauquelin, the conſtituent parts are,

Silex	43.33
Alumine	22.66
Lime	3.34
Soda with potaſh	9.34
Water	21
	99.67

The ſituation in which this mineral occurs is nearly the ſame with that of analcime. The name was given it by Haüy, from chabazion, an unknown ſtone mentioned in the poems of Orpheus.

Laumonite, *Zeolithe efflore ſcente*, Haüy.—Its colours are, yellowiſh-white, ſnow-white, and greyiſh-white. It occurs maſſive and cryſtallized in octahedral priſms, with edges apparently rounded; the ſummits of the cryſtals are dihedral. The cryſtals are ſmall, lining druſy cavities. The ſtructure is lamellar, and has a two-fold cleavage: it is tranſparent or tranſlucent when freſh; but on expoſure to the atmoſphere ſoon becomes opaque, loſing its hardneſs, and yielding to the preſſure of the finger. When freſh it ſcratches glaſs. The ſpecific gravity is 2.23. Bournon. It forms a jelly with acids. Before the blow-pipe it intumeſces, and is changed into a white enamel. According to Vogel, the conſtituent parts are,

Silex	49
Alumine	22
Lime	9
Water	17.5
Carbonic	2.5
	100

This mineral, which agrees in its principal characters with zeolite, was firſt found in Brittany, by M. Gillet Laumont, after whom it has been named by Werner. It has been found alſo at Paiſley, in Renfrewſhire, in amygdaloid, accompanying cubicite. Laumonite diſintegrates ſo rapidly, that for its preſervation it requires to be kept in well-cloſed bottles.

Croſs-Stone, *Harmotome*, Haüy, occurs in ſmall cryſtals: the form is generally a broad rectangular priſm, terminated on each extremity by four rhombic faces, with their acute angles ſet in the lateral edges of the priſm. Sometimes the edges of the rhombic faces are bevelled in one direction. But the name croſs-ſtone is derived from the frequent occurrence of two priſms interſecting each other, having one common axis. The broader planes by this interſection project, and form the figure of a croſs when the priſm is viewed at the end, or in the direction of the axis. The colour of croſs-ſtone is generally a greyiſh-white, which paſſes into ſmoke-grey: it is ſometimes a yellowiſh-white, paſſing into cream-yellow, and red. It is tranſlucent or tranſparent, with a luſtre between vitreous and pearly. The fracture is uneven, or imperfectly conchoidal. It is ſuppoſed, by profeſſor Jameſon, to have an imperfectly foliated ſtructure. It ſcratches glaſs feebly. The ſpecific gravity is 2.33. Before the blow-pipe it emits a yellowiſh phoſphoric light, and melts with intumeſcence into a colourleſs glaſs. It does not gelatinize with acids. This mineral differs from other members of the zeolite family, by containing barytes as an ingredient in its compoſition. According to Klaproth, its conſtituent parts are,

Silex	49
Alumine	16
Barytes	18
Water	15
	98

Dipyre, Haüy; *Schmelzſtein*, Werner.—Its colours are, light pearl-grey, greyiſh-white, or reddiſh-white. It occurs maſſive and cryſtallized, in aggregated, ſlender, octahedral, acicular priſms. The ſtructure is lamellar, with joints parallel to the ſides, and to the diagonal of a rectangular priſm. The luſtre is intermediate, between vitreous and pearly: it is tranſlucent. This mineral is ſufficiently hard to ſcratch glaſs; but is very frangible. The ſpecific gravity

vity is 2.630. Before the blow-pipe it intumesces, and melts with great eafe, giving out at the fame time a phosphoric light from this double effect of heat upon it. Haüy gave it the name of *dipyre*, on account of its eafy fufibility: it was called *fchmelzftein* by Werner. Its conftituent parts are,

Silex	60
Alumine	24
Lime	10
Water	2
	96

It is faid by Brongniart to occur in fteatite, along with iron pyrites, near Mauleon, in the Weftern Pyrenées.

The other members of the zeolite family are defcribed in the preceding volumes. See NATROLITE and WAVELLITE.

ZEOPHILOS, a word ufed by Quercetan as the name of an antimonial medicine.

ZEOPHYRUM, in the *Materia Medica*, the name of the *triticum æftivum*, or *hordeum nudum*, as it is called by fome authors, the naked barley.

ZEPHANIAH, a canonical book of the Old Teftament, containing the predictions of Zephaniah, the fon of Cufhi, and grandfon of Gedaliah; being the ninth of the twelve leffer prophets. He prophefied in the time of king Jofiah, a little after the captivity of the ten tribes, and before that of Judah; fo that he was contemporary with Jeremiah. He prophefies chiefly againft Judah, who continued very corrupt, notwithftanding the king's pious zeal for reformation, and the good example he gave to his fubjects.

ZEPHAT, in *Ancient Geography*. See SEPHAAT.

ZEPHIRA, in *Geography*, a fmall ifland in the Grecian Archipelago, near the N. coaft of Antiparos.

ZEPHIRE, in *Ancient Geography*, an ifland fituated on the coaft of that of Crete, before the promontory Samonium. Mela.

ZEPHRON, or ZEPHRONIA. See ZIPHRON.

ZEPHYRI FŒTUS, a term ufed by Hartman, and fome other writers, to exprefs a mole, or falfe conception.

ZEPHYRINUS, *Pope*, in *Biography*, fucceeded Victor in the Roman fee in the year 201. A perfecution at the commencement of his papacy obliged him to conceal himfelf, and when he was at liberty to exercife his functions, he was engaged in the fuppreffion of prevalent herefies, which difturbed the latter years of his pontificate. He died in the year 218 or 219. Bower.

ZEPHYRIUM, in *Ancient Geography*, a promontory of Afia, on the confines of Cilicia Propria. According to Strabo and Ptolemy, this promontory and that of Sarpedon formed the mouth of the river Calycadnus.—Alfo, a town at the extremity of this promontory.—Alfo, a promontory of the ifle of Cyprus, towards the S.W., at the extremity of a peninfula, which on the W. inclofes the gulf, at the bottom of which was Paphos.—Alfo, a promontory of Italy, on the eaftern coaft of Brutium, between the promontory of Hercules and the town of the Locri. Strabo.—Alfo, a promontory of Africa, in the Cyrenaica, upon the coaft of the Pentapolis. Ptolemy. Strabo diftinguifhes two promontories of this name on the coaft of Cyrenaica.—Alfo, a town of Afia, on the coaft of Paphlagonia.—Alfo, a town of Afia, in the interior of Cappadocian Pontus. Arrian gives it a port, and ftates it to be 120 ftadia from the ifle of Arrenthias, and 90 ftadia from the town of Tripolis.—Alfo, a promontory on the coaft of Egypt, between Campé and Alexandria, where was a chapel of Venus Arfinoe, and hence fhe took the name of Zephiritis.—Alfo, a promontory of Afia Minor, on the coaft of Caria, in the vicinity of the town of Myndus. Strabo.—Alfo, a town of the Tauric Cherfonefus; fituated on the fea-coaft, N.E. of Theodofia. Pliny.—Alfo, a promontory on the eaftern coaft of the ifle of Crete.

ZEPHYRIUM *Jugum*, a facred mountain of Hifpania, upon which was a fortrefs.

ZEPHYRUS, or ZEPHYR, Ζέφυρος, the weft wind; a wind blowing from that cardinal point of the horizon oppofite to the eaft.

The poets perfonify it, and reprefent Zephyrus as the mildeft and moft gentle of all the deities of the woods: the character of his perfonage is youth and gentlenefs.

It is alfo called *Favonius*, and *occidens*; and, by many, has been confounded with the *Africus*. See WIND.

ZEPS, in *Geography*, a town of the duchy of Warfaw; 20 miles E. of Wladiflaw.

ZERA, a town of Italy, in the Veronefe; 7 miles S. of Verona.

ZERANIA REGIO, in *Ancient Geography*, a country of Thrace. Steph. Byz.

ZERBITA, in *Geography*, a town of South America, in the government of New Grenada; 30 miles W.S.W. of Pamplona.

ZERBST, a town of Germany, in the principality of Anhalt Zerbft. It is the refidence of the prince, and the largeft and handfomeft town in the whole principality of Anhalt. The refidence-houfe here is remarkably grand. In the town are two Lutheran churches, one of which is ufed by the Calvinifts, together with an univerfity, common to all the princes of Anhalt, and founded in 1582, out of a fchool: it has a rector, with three Calvinift and one Lutheran profeffors. The principal trade is in beer, with manufactures of gold and filver; 8 miles N.N.W. of Deffau. N. lat. 52° 3′. E. long. 12° 10′.

ZERDA, in *Zoology*, a name given by the Moors to an animal which inhabits the defert of Sahara, extending beyond mount Atlas.

This is the *canis cerdo* of Linnæus, with a ftraight tail, a palifh or yellowifh-white body, with prolonged upright ears, internally rofe-coloured. It is the fennec of Bruce, and a beautiful African and Afiatic animal, and is principally found in Arabia.

Pennant claffes it under the genus of dog; and defcribes it as having a pointed vifage, long whifkers, large bright black eyes, very large ears of a bright rofe colour, internally lined with long hairs, and orifice fo fmall, as not to be vifible, probably covered with a valve or membrane; legs and feet like thofe of a dog, and taper tail; its colour is between a ftraw and pale brown; its length from nofe to tail ten inches, its ears three inches and a half long, tail fix, and height not five. It burrows in the fandy ground, and is fo exceffively fwift, that it is very rarely taken alive; feeds on infects, efpecially locufts; fits on its rump; is very vigilant; barking like a dog, but with a fhriller found, and chiefly in the night; and is never obferved to be fportive.

M. Buffon fays of this animal, that it is found to the fouth of the Palus Tritonides, in Lybia; that it has fomething of the nature of the hare, and fomething of the fquirrel; and that it lives on the palm-trees, and feeds on the fruits: hence probably it derives its name fennec from φοινιξ, a palm-leaf. Bruce's Travels, vol. v.

ZERDUSHT, in *Biography*. See ZOROASTER.

ZEREA, in *Geography*, a town and fortress of Persia, in Farsistan: this town was taken by the troops of Timur Bec, with great slaughter; 18 miles N.N.E. of Schiras.

ZEREB, a town of Persia, in the province of Segestan; 130 miles N.W. of Zarang.

ZEREWICA, a town of Lithuania; 5 miles S.W. of Slonim.

ZERIB, a town of Kurdistan; 25 miles W. of Gulamerik.

ZERICHUM, a name given by some of the chemical writers to arsenic.

ZERKI, in *Geography*, a town of Kurdistan; 30 miles S.W. of Betlis.

ZERKWITZ, a town of Lusatia; 2 miles W. of Lubbenau.

ZERMA. See SURMA.

ZERMAGNA, a river of Dalmatia, which runs into the Adriatic, opposite Pago.

ZERMONY, a town of Lithuania; 10 miles N.W. of Lida.

ZERNA, a mountain of Carinthia; 3 miles N.W. of Milstatt.

ZERNA, a word used by some of the chemical writers to express an ulcerated lepra or impetigo. The chemical authors use it also as a name for the foulnesses which they call the *lepræ metallorum*, or leprosies of metals.

ZERNEMBL, or TSCHERNEMBL, in *Geography*, a town of the duchy of Carniola, on a small river which runs into the Kulpa; 4 miles S.S.W. of Rudolfswerth. N. lat. 45° 50′. E. long. 15° 5′.

ZERNENSIUM COLONIA, in *Ancient Geography*, a colony of Dacia, founded by Trajan.

ZERNETZ, in *Geography*, a town of Switzerland, in the Upper Engadine. In the late war it was taken by the French, and soon after retaken by the Austrians; 8 miles N. of Zultz.

ZERNITZ. See CZERNETZ.

ZERO, a river of Italy, which runs into the sea, 7 miles N. of Venice.

ZERO, denotes the point from which the scale of a thermometer is graduated. Thus Celsius's and Reaumur's thermometers have their zero at the freezing-point, while the thermometer of Fahrenheit has its zero at that point at which it stands when immersed in a mixture of snow and common salt. In Wedgwood's pyrometer, the zero corresponds with 1077° of Fahrenheit's, each degree of which is equal to 130° of Fahrenheit. Consequently 180° Fahr. = 100° Cels. = 80° Reaum. = 150° De Lisle = $\frac{1}{13}$ Wedgw. See THERMOMETER.

ZEROGERE, in *Ancient Geography*, a town of India, on this side of the Ganges, E. of the river Namadus. Ptolemy.

ZEROWITZ, in *Geography*, a town of Bohemia, in the circle of Bechin; 3 miles W.S.W. of Potschaken.

ZERREH, or ZURRAH, *Lake of*, a lake of Persia, in the province of Seistan or Segestan, into which the river Heermund, or *Hindmund*, (the ancient Etymander,) navigable for boats from Bost to Zarang, flows through the centre of it, from the mountains of Huzara, beyond Cabul. This lake is said to be 30 fursungs in length, and 6 in breadth, or about 100 miles long, and 20 broad at the widest part. It is principally formed by the waters of the rivers Heermund and Ferrah, and in the dry season resembles more a marsh than a lake, being covered with rushes and reeds. In the middle the water is fresh; but brackish towards the shore, as the sandy plains which surround it are impregnated with salt. The lake is full of fish and wild fowl; and in its centre there is a fortified town, called "Kookhozerd," built on a high island, where the treasure of the principal families of Seistan used to be deposited when the province was invaded. It is said that on the borders of this lake is a town named "Nassarabad," which is described as being four days' journey for a loaded camel, W. of the city of Dooshak, the present capital of the province.

ZERTA, or SERTA, the *Zerte*, or *Serte*, in *Ichthyology*, a fish caught in the rivers of Italy, and some other places, of the figure of the chub, and called by authors *capito anadromus*, and the *blike*. It seldom grows to more than ten pounds weight, and at times lives in rivers, at times in the sea; and is esteemed a very well tasted fish, especially a little before the season of its spawning, either fresh, salted, or prepared in various ways by pickling, &c.

The zerte is that species of cyprinus described by Gesner and others under the name of *capito anadromus*. See CYPRINUS *Vimba*.

This is the silvery-blueish carp, olivaceous above, with the dorsal, caudal, and anal fin blueish, the rest reddish, and the nose protuberant. It is a native of Germany, Russia, Sweden, and other parts of Europe, inhabiting rivers, and migrating into the Baltic sea.

ZERVINKA, in *Geography*, a town of Servia, on the Danube; 10 miles N.W. of Belgrade.

ZERUIS, in *Ancient Geography*, a town of Thrace, on the route from Dyrrachium to Bysance, between Dymæ and Plotinopolis. Anton. Itin.

ZERUMBET, in *Botany*, a name first used by Serapio, and apparently either of Arabian or Indian origin. It belongs to one of the aromatic roots of the natural order of *Scitamineæ*, the produce of the East Indies, but rather to a *Kæmpferia*, than to the species of Ginger to which Linnæus has applied it. (See ZINGIBER.) Dale has very justly observed on this subject, *Pharmacologia*, 275, that in the present instance, as well as innumerable others, the Arabian writers are so brief, as well as vague, in their descriptions, and so contradictory amongst themselves, that we can scarcely tell whether they were acquainted with any particular object or not.

Wendland, Jacquin, and Poiret, (Lamarck Dict. v. 8. 857,) have most unaccountably made a genus of *Alpinia nutans*, and called it *Zerumbet;* but this cannot on any principle be maintained.

ZERYNTHUS, in *Ancient Geography*, a town of Thrace, which had a cavern of the same name, and which the ancients called Zerynthium Antrum. This cavern was consecrated to Hecate, to whom they sacrificed dogs. Suidas.

ZERZEN, in *Geography*, a town of Arabia, in Yemen; 36 miles S.E. of Ghezar.

ZESEMITZ, a town of Bohemia, in the circle of Chrudim; 8 miles N. of Chrudim.

ZESSEL, a town of Silesia, in the principality of Oels; 5 miles N.E. of Oels.

ZEST, the woody thick skin quartering the kernel of a walnut. Some physicians prescribe this zest, dried, and taken with white wine, as a remedy against the gravel.

The word is also used for a chip of orange or lemon-peel; such as is usually squeezed into ale, wine, &c. to give it a flavour; or for the fine thin oil that spurts out of that peel on squeezing it.

Hence, to zest an orange or lemon, among confectioners, is to cut the peel from top to bottom into small slips, as thin as possible; or, to zest, is to squeeze the peel over the surface of any thing.

ZESTO-

ZESTOLUSIA, a term ufed by fome medical authors to exprefs bathing in warm water, by way of diftinction from *pfuchrolufia*, or bathing in cold water.

ZETA, or ZETECULA, a little clofet, or withdrawing chamber, with pipes running along the walls, to receive from below either the cool air, or the fteam of warm water.

The word is formed either from ζεειν, *to be warm*; or of ζην, *vivere, to live*, on account of the ufe made hereof for love and enjoyment.

ZETA, or *Zetta*, (*Menzil*,) in *Ancient Geography*, a town of Africa Propria, fituated near the fea, E. of Vicus Augufti.

ZETETÆ, Ζητηται, among the Athenians, were officers appointed upon extraordinary occafions, to inquire after the public debts, when, through the neglect of the receivers, or by other means, they were run up to large fums, and began to be in danger to be loft, if not called in.

ZETETICE, Ζητητικς, formed from ζητεω, *I feek*, or zetetic method, in *Mathematics*, the method made ufe of to inveftigate or find the folution of a problem.

The ancient Pyrrhonians were fometimes called *Zetetici*, q. d. *feekers*.

ZETIN, in *Geography*, a town of Croatia; 28 miles W.N.W. of Novi.

ZETLAND, or SHETLAND, the name of a clufter of iflands, fituated in the Northern ocean, between the 59th and 62d degrees of N. latitude, and a very little to the W. of the meridian of London. The moft fouthern part is nearly 100 miles N.N.E. from the northern county of Scotland. Thefe iflands exceed one hundred in number, of which only thirty-four are inhabited; the others, confifting chiefly of rocks and fands, are unfitted for human fupport. By different writers, they have been named Hethland, Hialtland, Zetland, Schetland, and Shetland; which names, Dr. Edmondfton fays, "are of Norwegian origin, and are fuppofed to be defcriptive of their form or appearance." The moft correct and approved orthography is that of Zetland. The general appearance of thefe iflands is bleak, bare, and rocky; but fome interior parts of the main-land are cultivated, clothed, and cheerful. In many places on the coafts, rocks of immenfe fize are feen to rife above the foaming waves, fome of which are at confiderable diftance from the fhores. Some of thefe are alfo perforated by vaft natural arches; in other parts there are deep caverns and fubterranean receffes. Two of thefe are called the Seranda, one of which extends above 300 feet in depth. Almoft all the large iflands are deeply interfected by tortuous bays, or voes, as they are provincially called, which afford facilities for internal communication, and excellent harbours for veffels. Several of them are commodious, and well fheltered from dangerous winds. Some of the iflands have lakes, the largeft of which is not more than two miles in length. The higheft hill is Mons Ronaldi, in the parifh of Northmaven; the height of which, from barometical meafurement, is 3944 feet above the level of the fea. Some of the headlands are lofty and grand, one of which, Nofs-head, is above 600 feet in height.

According to the population reports of 1811, the following is the enumeration of houfes and inhabitants, and the names and number of parifhes. The total number of houfes 8230, inhabited by 9038 families, 16 houfes building, and 101 unoccupied. The whole population was 46,153, confifting of 20,151 males and 26,002 females. The parifhes are, 1. Aithfting and Sandfting; 2. Breffay, Burra, and Quarff; 3. Delting; 4. Dunroffnefs, Sandwick, Cunnifbrough, and Faria ifle; 5. Lerwick and Gulberwick; 6. Lunnafting, Nefting, Skerries, and Whalfay; 7. Northmavine; 8. Tingwall, Whitenefs, and Weifdale; 9. Unft; 10. Walls, Sandnefs, Papa, and Fonta; 11. Yell (North) and Fellar; 12. Yell (South and Middle).

As the chief hiftories and topographical peculiarities of the Zetland iflands have been fully detailed under the words MAINLAND, LERWICK, and SCALLAWAY, the reader is referred to each word refpectively.—A View of the ancient and prefent State of the Zetland Iflands, by A. Edmondfton, M.D. 2 vols. 8vo. 1809.

ZETLAND *Iflands*, *Fowla* or *Fula*, the moft weftern of the Shetland iflands, and is fuppofed to be the "Ultima Thule" of the ancients. It is about three miles long and one and a half broad, nearly twenty miles diftant from any land, W. of the clufters of Orkney and Shetland, to which it is politically annexed: it affords excellent and extenfive pafture for fheep; and is inhabited by 26 or 27 families.

ZETTERITZ, a town of the principality of Culmbach; 11 miles S.W. of Culmbach.

ZETUS, a word ufed by fome of the chemical writers as a name for vitriol.

ZEVACO, in *Geography*, a fmall ifland in the Pacific ocean, near the coaft of Veragua. N. lat. 8°. W. long. 81° 46′.

ZEVEN. See CLOSTER *Seven*.

ZEVENAER. See SEVENAER.

ZEUF, or GAER, a town of the kingdom of Balk; 100 miles S.E. of Balk.

ZEUGITÆ, Ζευγιται, among the Athenians, the third clafs of the people, or thofe who had an eftate of two hundred medimni.

ZEUGITES, in *Botany*, an ancient name, adopted by Browne, but no otherwife applicable to the prefent genus, than as far as concerns its reedy habit. The *Zeugites* of Pliny was a large Bœotian reed, fo called from ζυγος, *a yoke*, becaufe it was bound together, in portions of different lengths, to make the paftoral pipes; as wheaten ftraws are, by our fhepherd's boys, to this day; but the Weft Indian grafs, of which we are now to give an account, has not even this coincidence with the original.—Browne Jam. 341. Schreb. Gen. 810. Willd. Sp. Pl. v. 4. 204.—Clafs and order, *Monoecia Triandria.* (Rather *Triandria Digynia.*) Nat. Ord. *Gramina*, Linn. Juff.

Gen. Ch. *Common Calyx* a glume of two valves; the outer one broadeft, concave, abrupt and jagged, ribbed; membranous at the edges; the inner narrower, fharper and keeled. *Male Florets* two, fmalleft, on a common ftalk the length of the folitary female floret, within the common calyx. *Perianth* none. *Cor.* Glume of two ovate-oblong, compreffed, bluntifh, awnlefs, equal valves. *Stam.* Filaments three, capillary, the length of the corolla; anthers oblong, cloven at each end.

Female within the larger glume of the common calyx, feffile. *Perianth* none. *Cor.* Glume of one oblong concave valve, twice the fize of the calyx, bordered towards the top with a dilated membrane, awned; the awn terminal, capillary, ftraight, half as long again as the glume. *Pift.* Germen oblong; ftyle divided; ftigmas long, fhaggy. *Peric.* none. *Seed* folitary, oblong.

Obf. Schreber remarks, that this grafs differs fo entirely, in every character, from *Apluda*, with which Linnæus combines it, that they are totally irreconcileable. We fhould refer both, with all other true *Gramina*, as in *Fl. Brit.* to the clafs *Triandria*.

Eff. Ch. Common Calyx of two valves, with three flowers; the female one feffile; the males ftalked. Corolla of of the males of two beardlefs valves; of the female of one awned valve. Style divided. Seed oblong.

1. Z. *americanus.* Jamaica Yoke-grafs. Willd. n. 1. (Z. arundinaceus, ramofus, minor, rufefcens; paniculâ fparfâ terminali; Browne Jam. 341. t. 4. f. 3. Apluda Zeugites; Linn. Sp. Pl. 1487. Amœn. Acad. v. 5. (not 6), 412. Swartz Obf. 384.)—Native of Jamaica. Found by Dr. Browne at Cold-fpring, in the mountains of New Liguanea, in a rich foil, and fhady fituation. His original fpecimens are in the Linnæan herbarium. The *root* is faid to be perennial. *Stem* two feet high, much branched, afcending, round, jointed, polifhed, brownifh, leafy, rather flender. *Leaves* alternate, on flender ftalks, each with a long fheathing bafe, reclinate, or nearly pendulous, ovate, acute, entire, fmooth, many-ribbed, from an inch to an inch and a half long, and from half an inch to an inch broad. *Panicles* terminal, from the fheaths of the uppermoft leaves, compound, fpreading, with fmooth flender branches. *Glumes* green, ftriated, fmooth. The habit is no lefs foreign to the genus *Apluda* than the generic characters.

ZEUGMA, Ζευγμα, literally denoting a joining together; from ζευγνυω, *I join*, a figure in *Grammar*, whereby an adjective, or verb, which agrees with a nearer word, is alfo, by way of fupplement, referred to another more remote.

Thus Terence, "Utinam aut hic furdus, aut hæc muta facta fit." So Virgil, "Hic illius arma, hic currus fuit." In which cafes, the words *facta fit* agreeing primarily with *hæc muta*, are alfo made to agree or extend to *hic furdus:* and the verb *fuit* is not only referred to *hic currus*, which it properly refpects, but farther to *hic illius arma*.

Of this fpecies of ellipfis, which differs from the ellipfis properly fo called, in that the word which is to be underftood once or oftener, has been already mentioned, Meffieurs De Port Royal enumerate three forts; *viz.* when we repeat the noun or verb in the fame manner it has been already expreffed; or when the word expreffed cannot be repeated without receiving fome alteration in gender, cafe, number, or perfon; or when, after a word which includes the whole, a diftribution of the parts is made without repeating the verb. Latin Gram. vol. ii. p. 183.

The Latins, it may be here obferved, take a liberty in conftructions, which fome of the nicer critics among the moderns, particularly the French, will not allow in the modern tongues.

Zeugma, (*Roum-Kala*,) in *Ancient Geography*, a town of Afia, or a place on the right bank of the Euphrates, S.E. of Samofata, and over-againft Apamea.

ZEVICO, in *Geography*, a town of Spain, in the province of Leon; 10 miles S.E. of Palencia.

ZEVIO, a town of Italy, in the Veronefe; 10 miles S.S.E. of Verona.

ZEVKETI, a town of the principality of Guriel; 25 miles S.E. of Puti.

ZEULEN, a town of Bavaria, in the bifhopric of Bamberg, on the Rotach; 21 miles N.N.E. of Bamberg. N. lat. 50° 13′. E. long. 11° 16′.

ZEULENRODA, a town of Saxony, in the county of Reuffen, containing two churches and 350 houfes. Here is a manufacture of ftuffs, and a confiderable one of ftockings; 10 miles W. of Greitz. N. lat. 50° 36′. E. long. 11° 51′.

ZEUS, in *Ichthyology*, a genus of fifh, of the order of the *thoracici;* the characters of which are, that the head is compreffed and declining; the upper lip is arched by means of a tranfverfe membrane; the tongue is awl-fhaped; the branchioftegous membrane has feven perpendicular rays, the loweft placed tranfverfely; the dorfal fins, in moft fpecies, furnifhed with projecting filiform rays; and the body is compreffed, broad, thin, and of a bright colour. The fpecies enumerated by Gmelin and Shaw are the following:

Vomer. Silvery dory, with the fecond ray of the dorfal fin very long. Bloch. (See Vomer.) Its fhape is rhomboidal, length fix or eight, or more, inches, body thin, without fcales, tinged on the upper parts with a blueifh caft, mouth with fmall teeth. Native of the American feas, and fometimes feen in thofe of the north of Europe: eatable, but not much efteemed.

Gallus. Silvery dory, with the tenth ray of the dorfal and fecond of the anal fin longer than the body. Shape and length, and body, like thofe of the former; back tinged with a greenifh hue, head large, mouth wide. Native of the American and Indian feas, efculent: when firft taken grunting, like the gurnards. The abacatuaja of Marcgrave.

Faber. Gold-green, fuliginous dory, with a dufky central fpot on each fide of the body, or with a rounded tail, brown fpot on the middle of the fides and two anal fins. Linnæus. This is the common dory (fee Doree), which is a native of the Mediterranean, Northern, and Atlantic feas. Its head is large and long; length generally twelve or fifteen inches, and weight ten or twelve pounds; mouth wide, lower jaw longer than the upper, teeth fmall and fharp, eyes large, body covered with fmall fcales, and marked by a curved lateral line, which defcending pretty fuddenly from the gill-covers, paffes on to the tail; back arched, and furnifhed with a row of ftrong, fmall prickles, continued along the curve of the abdomen; two very ftrong and fharp fpines at the bafe of the pectoral fins. The introduction of this fifh, as excellent food, to the tables of the higher ranks, is of no remote date; Mr. Quin being confidered as the founder of its peculiar reputation in the polite circles. This fifh is of a very voracious nature, preying on fmaller fifhes and their fpawn, as well as various kinds of fea-infects, the fmaller fhell-fifh, &c. It emits a noife like that of the gurnards and fcorpænas, when firft taken, by violently forcing out the air from its gill-covers.

Aper. Reddifh dory, with rough fcales and even tail; a fmall fpecies about three inches long, refembling the common dory in habit; fnout protuberant, and turning upwards; no perceptible teeth; eyes large, with white irides; two dorfal fins, the anterior having nine ftrong and fharp fpines, the firft low and fcarcely vifible, the fecond four times longer, and the third very long and thick; the fecond dorfal fin confifting of twenty-three foft rays; the vent-fin having twenty-fix rays, the pectoral fins about fourteen, and the ventral fix. This fifh generally refides at the bottom, and is accidentally taken after great ftorms: it is not eatable, being fmall, coarfe, and of an unpleafant odour. It is a native of the Mediterranean.

Insidiator. Silvery dory, with fides fpeckled with black, and narrow extenfile mouth; fhape rhomboidal; fmaller than Z. ciliaris; colour bright-filvery, blueifh-green above, and fpeckled with black points; body without fcales; lower lip retractile, and mouth capable of forming a tubular fnout, for ejaculating a drop of water againft fuch infects as happen to alight on or fly about the aquatic plants near the fhores of the waters it inhabits, and thus obtain its prey. A native of the rivers and frefh-waters of India.

Ciliaris. Silvery dory, with fome of the rays in the dorfal and anal fin exceffively long; body rhomboidal, thin, without fcales, and of a bright-filver colour, with a blueifh or or greenifh caft on the back, and fmall and floping; lower jaw longer than the upper; teeth fmall and fharp; feveral of the laft rays of the dorfal and anal fin extending farther than the tail itfelf, the long and flexible filaments of which count de Cepede imagines attract fmall fifhes, which miftake them for worms, the dory himfelf lying concealed among fea-weeds, &c. and waiting for its prey: the count alfo conceives that thefe may ferve to fuftain the fifh by coiling round the ftems of fea-plants, &c. A native of the Indian feas; but not efteemed as food, being fmall and coarfe.

Luna or Opah. Dory with fomewhat lunated tail; the body being generally either red, green, or purple, with oval white fpots. This is a fuperb fpecies, and found, probably wandering from the warmer regions, in the Mediterranean and Northern feas, the largeft fpecies of the kind, being between four and five feet in length, in colour varying from a bright filvery-green ground to a bright gold colour, and variegated on the fides with pretty numerous and moderately large oval white fpots, while the fins and tail are bright fcarlet; the fkin feemingly deftitute of fcales and perfectly fmooth.

Specimens of this fifh have been occafionally thrown on the Britifh coafts, one of which is defcribed under the article Opah. A dried fpecimen of this fifh may be feen in the Britifh Mufeum.

Quadratus. Grey dory, with tranfverfe dufky or a cinereous body, and even tail. This fifh, found in the fea that wafhes the coaft of Jamaica, is defcribed by fir Hans Sloane, as five inches long and four broad in the middle, narrowing from thence gradually to the head and tail; mouth fmall, but with rows of fmall, fharp teeth; tongue round and cartilaginous; pupil large and black, in a white circle; feven fins; tail almoft fquare; whole body clothed with grey or afh-coloured fcales, having three or four tranfverfe black lines; with a very crooked line from head to tail.

Zeus, a fpecies of fcorpæna. See Scorpæna Porcus.

ZEUXIS, in *Biography*, a celebrated ancient painter, who is faid to have been a native of Heraclea, either in Greece or Magna Græcia, and to have commenced the practice of his art in the fourth year of the 95th Olympiad, B.C. 397. According to Quintilian, he is the firft artift who underftood the proper management of lights and fhades, and to have excelled in colouring; but ambitious of imitating the ftrength and grandeur of Homer's manner, he is charged with giving unfuitable bulk to the heads and maffivenefs to the limbs of his figures. Notwithftanding thefe alleged imperfections, he attained diftinguifhed excellence; and in the profecution of it he was attentive even to the minuteft circumftance. Many inftances occur in his hiftory to this purpofe. In his picture of Helen, executed for the Crotonians, as an ornament for their temple of Juno, he determined to combine every quality that might conftitute a perfect beauty; and with this view he felected five of the handfomeft females of Crotona, and transferred to his picture, from their naked charms, an affemblage of all that were moft perfect in their kind. This figure has been extolled as the fineft fpecimen of art exifting; and under it the painter, not unconfcious of his merit, infcribed the lines of Homer, in which Priam expreffes his admiration of the beauty of the real Helen. Every one who faw it, before it was placed in the temple, paid the painter a fee, which, added to the liberal recompence of the Crotonians, amply repaid him for his fkill and labour. This enabled him to gratify his vanity by making prefents of his pictures, for which no adequate price could be given. To fuch a degree was he enriched by his art, that he was able to indulge his vanity by appearing at the Olympic games with his name embroidered in golden letters upon his mantle. Such were the failings of a man, who rendered his name illuftrious by the fupereminent exercife of his art. Among his moft famous performances are enumerated a Jupiter on his throne, with the other gods ftanding round;—a Hercules in his cradle, ftrangling the ferpents, Alcmena and Amphitryon witneffing the exploit with terror;—a Penelope, with an expreffion conformable to her character;—a Cupid crowned with rofes, for the temple of Venus at Athens;—a Marfyas bound, afterwards placed in the temple of Concord at Rome;—and a group of Centaurs. The time of his death is not known; but as to the manner of it, the following whimfical anecdote is recorded: after having painted an old woman, whilft he was attentively furveying it, he was feized with fuch a violent fit of laughter, that he died on the fpot. Pliny Hift. Nat. Gen. Biog.

ZEYA, in *Geography*, a river of Auftria, which rifes near Ernfprung, and runs into the Marfch, 6 miles E. of Zifterfdorf.

ZEYL. See Zeil.

ZEYLAND, a fmall ifland near the coaft of Lapland. N. lat. 70° 10′.

ZEYRING, a town of the duchy of Stiria; 6 miles N.W. of Judenburg.

ZEZARE, a river of Portugal, which rifes in the eaft part of Eftremadura, and runs into the Tagus, at Tancos.

ZEZARINE, or Kierazin, a fmall ifland in the Perfian gulf, hardly half a mile in length. N. lat. 28° 8′.

ZFOKEN, a town of Saxony, in the circle of Erzgebirg; 8 miles N.W. of Grunhayn.

ZHA, a river of Africa, which forms the eaft boundary of Fez, and runs into the Mullooiah.

ZHEHOL, Zheho, or *Geho*, a town of Chinefe Tartary, in the country of the Mandfhars, not far beyond the great wall, and fummer refidence of the emperor of China; 120 miles N.E. of Peking.

ZIA, an ifland in the Grecian Archipelago, anciently called "Ceos" and "Hydraffa," about 16 leagues in circumference. The inhabitants are Greeks, who have a bifhop. The foil is fertile, and they have a good breed of cattle, with plenty of wild fowl, efpecially partridges and pigeons. The chief manufactures are, filk, camlets, and a fort of cloaks made of goats' hair. Among the productions of the ifland may be reckoned the velani, a fpecies of acorn much efteemed. Of four confiderable towns or cities in this ifland, the only one at prefent remaining is Carthea, or Zeia, containing about 2500 houfes, with a harbour capable of receiving veffels of confiderable burden, and where a whole fleet may ride in fecurity from every gale, in every depth of water, and in very good anchoring ground. The entrance into this creek or arm of the fea is very fafe by keeping it, according to the fea-phrafe, open; but when once within it, fhips of whatever burden may ride where they pleafe to an anchor; 10 miles E. of Cape Colonni. N. lat. 37° 30′. E. long. 24° 24′.

Zia, *Ziba*, or *Siba*, in *Ancient Geography*, a city beyond Jordan; 5 miles W. from Philadelphia.

ZIATEK, in *Geography*. See Saatz.

ZIB. See Zeb.

ZIBA, a town of Arabia, in the province of Hedsjas; 20 miles S.S.W. of Madian.

ZIBATSKOI, a fort of Ruffia, in the government of Kolivan, on the Irtifch. N. lat. 54° 44′. E. long. 92° 20′.

ZIBEL-

ZIBELLINA. See Mustela *Zibellina*, and Sable.

ZIBER, in *Geography*, a town of European Turkey, in Bulgaria, on the Danube; 24 miles S.S.E of Viddin.

ZIBET, or Zibethi. See Zebid.

ZIBETHA, in *Zoology*. See Viverra *Zibetha*.

ZIBETHUM, or Zibeta, in *Natural Hiſtory*, *civet*, a perfume contained in a bladder, in the groin of a civet-cat. See Civet.

ZIBIBIÆ, a name given by ſome authors to a large ſort of raiſins, reſembling the ſtones of dates in ſhape; they have much pulp, but very little moiſture.

ZIBREIRA, in *Geography*, a town of Portugal, in the province of Beira; 30 miles S. of Alfayates.

ZIBRITZ, a river of European Turkey, which runs into the Danube, near Ziber, in Bulgaria.

ZIBU. See Sibu.

ZICCARA, a name of an Indian fruit, reſembling a pine-cone, and containing twenty, thirty, or more kernels, of no known uſe in medicine.

ZICHIANS, in *Geography*, one of the tribes of mount Caucaſus, collaterally related to the Tſcherkeſſians or Circaſſians. The Zichians or Tſchekians, called by the Ruſſians Yaſi, are the principal inhabitants of the iſle of Taman. They formerly paid a ſmall tribute to the Krimean khan; in all other reſpects they are governed by their own beys. The iſle Atſchuk or Atſchuyef is likewiſe inhabited by Zichians. The Auchaſſians and Zichians are two tribes, which, properly ſpeaking, are only one collateral branch of the Tſcherkeſſians, have belonged to the Ruſſian empire, as inhabitants of the Kuban, ſince the year 1783. See Circassia.

ZICKAR, a mountain of Algiers, anciently called "Garaphi;" 18 miles S. of Sherſhell.

ZIDDIM, or Assedim, in *Ancient Geography*, a city of Naphtali. Joſh. xix. 35.

ZIDRACH, in *Natural Hiſtory*, the name given by Cuba, and ſome other authors, to that ſpecies of the ſyngnathus of Artedi, commonly called the hippocampus.

ZIECKRA, in *Geography*, a town of Saxony, in the circle of Neuſtadt; 4 miles S. of Auma.

ZIEGELBACH, a river of Germany, which runs into the Rhine, near Gernſheim.

ZIEGENBALG, Bartholomew, in *Biography*, a Lutheran German divine, was born in 1683 at Pulnitz, in Upper Luſatia, and finiſhed his education in the univerſity of Halle. In 1705 he was ordained at Copenhagen, with a view of being ſent as a miſſionary by Frederick IV. king of Denmark to India. In 1706 he arrived at Tranquebar, but he was there oppoſed and impriſoned, ſo that he reſolved, upon his releaſe, to return to Europe. In 1715 he landed at Bergen in Norway, and after having viſited Copenhagen, in order to give an account of his miſſion, and to receive further inſtructions, he travelled through Germany and Holland into England, and from thence to India in March 1716. On his return to Tranquebar, he eſtabliſhed a Portugueſe and Malabar printing-houſe, in which many of his own works were printed. In the faithful and laborious diſcharge of his miſſionary duty he employed 13 years, at the cloſe of which period his life terminated by a diſorder probably owing to his intenſe application. This event happened in February 1719, in the 36th year of his age. His works were numerous, and of theſe the principal are mentioned in the Gen. Biog.

ZIEGENFELD, in *Geography*, a town of Bavaria, in the biſhopric of Bamberg; 12 miles N.E. of Bamberg.

ZIEGENHALS, a town of Sileſia, in the principality of Neiſſe: this place is famous for its manufactures of beautiful glaſſes. Here are ſome iron-works; 10 miles S. of Neiſſe. N. lat. 50° 12′. E. long. 17° 17′.

ZIEGENHAYN, a town of Germany, and chief place of a county of the ſame name, in the principality of Heſſe. It is ſituated in a moraſs, and can be occaſionally inundated. In this place were kept the archives of the ſovereign families of Heſſe. The counts of Ziegenhayn are extinct; 15 miles S. of Fritzlar. N. lat. 50° 50′. E. long. 9° 15′.

ZIEGENRUCK, a town of Saxony, in the circle of Neuſtadt, on the Saal; 10 miles S. of Neuſtadt. N. lat. 50° 32′. E. long. 11° 42′.

ZIEGLER, James, in *Biography*, a learned writer of the 16th century, was born at Landſhut in Bavaria, and having ſtudied in the univerſity of Ingolſtadt, finiſhed his education by viſiting the libraries of foreign countries, and cultivating the ſociety of learned men. He reſided ſeveral years at Rome, collecting in the hiſtory of Leo X. and Clement VII. every anecdote that tended to the diſcredit of the papal court; and in his conferences with learned Swedes, materials for a correct hiſtory of Scandinavia, and of the cruelties committed by Chriſtian II. of Denmark. It appears that, beſides ſome other poſts which he occupied, he was for ſome time profeſſor at Ingolſtadt, and, as ſome ſay, of mathematics at Upſal. He was for a conſiderable time a teacher at Vienna, from whence, for fear of the Turks, he retired to Wolfgang, biſhop of Paſſau in Bavaria, under whoſe protection he compoſed ſome of his works; and he died at Paſſau in 1549. The earlieſt of his publications, whilſt he was a Catholic, was written againſt the Waldenſes, and printed at Leipſic in 1512. His other works are multifarious, conſiſting of geographical, hiſtorical, political, mathematical, and controverſial tracts, abounding with literary reſearches. Although he did not openly renounce the Roman Catholic religion, he favoured the cauſe of Luther and the reformers. Thuan. Hiſt. Moreri. Gen. Biog.

ZIELENZIG, in *Geography*, a town of the New Mark of Brandenburg. This town belonged in a conſiderable degree to the knights of Malta; 18 miles S.E. of Cuſtrin. N. lat. 52° 30′. E. long. 15° 16′.

ZIENWALD, a town of Saxony, in the margravate of Meiſſen; 4 miles S.S.W of Lauenſtein.

ZIERCKOWITZ, a town of the duchy of Stiria; 4 miles E.S.E. of Windiſch Feiſtritz.

ZIERENBERG, a town of the principality of Heſſe Caſſel; 11 miles N.W. of Caſſel. N. lat. 51° 22′. E. long. 9° 20′.

ZIERIA, in *Botany*, was ſo named by the writer of the preſent article, in memory of the late Mr. John Zier, F.L.S., who, as Dr. Sims records in the Botanical Magazine, "having been appointed to a profeſſorſhip in a Poliſh univerſity, was preparing to leave this country, but was prevented by a chronic diſeaſe, which terminated in death." That Mr. Zier was "a learned and induſtrious botaniſt," we are moſt ready to confirm by our own teſtimony. He was no leſs meritorious in his private character, and bore with modeſty and patience thoſe privations, which too often belong to literary merit in a foreign country, eſpecially where canting and time-ſerving are out of the queſtion. We have been informed that Mr. Zier was the coadjutor of Mr. William Curtis (ſee that article), in part, at leaſt, of the celebrated *Flora Londinenſis;* taking upon himſelf the technical Latin deſcriptions, while Mr. Curtis was engaged in thoſe practical obſervations, experiments, and ſcientific diſtinctions, which make the peculiar merit of the work.

work. Mr Zier died about the year 1796, perhaps rather earlier, at no advanced period of life.—Sm. Tranf. of Linn. Soc. v. 4. 216. Jackfon in Andr. Repof. v. 9. 606. Sims in Curt. Mag. 1395. Poiret in Lamarck Dict. v. 8. 859.—Clafs and order, *Tetrandria Monogynia*. Nat. Ord. *Rutaceæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in four deep, ovate, rather acute, equal, permanent fegments. *Cor.* Petals four, ovate, pointed, fomewhat coriaceous, downy, equal, longer than the calyx, alternate with its fegments. *Stam.* Filaments four, alternate with the petals, awl-fhaped, fimple, fmooth, inflexed, much fhorter than the corolla, each inferted into a globular gland, projecting above their bafe at the infide; anthers terminal, roundifh, with a minute point. *Pist.* Germen fuperior, roundifh, four-lobed; ftyle terminal, erect, columnar, the length of the ftamens, deciduous; ftigma capitate, four-lobed. *Peric.* Capfules four, connected at their inner edge, each compreffed, abrupt, of two valves and one cell. *Seeds* folitary, oval, compreffed, each enclofed in a horny elaftic tunic of two valves.

Eff. Ch. Calyx in four deep fegments. Petals four. Stamens fmooth, each inferted into a gland. Style fimple. Stigma four-lobed. Capfules four, combined. Seeds with an elaftic tunic.

We are acquainted with four fpecies of this genus, confifting of fhrubs, natives of New South Wales, with oppofite, ftalked, ternate *leaves*, and white *flowers*. It is allied to *Boronia*, (fee RUTACEÆ,) as well as to CROWEA, ERIOSTEMON, CORRÆA, PHEBALIUM, and MELICOPE, to which we refer the reader. *Zieria* is effentially characterized by the infertion of each of its *ftamens* into the outfide of one of four large glands, ftanding on the *receptacle*, at the bafe of the germen; as well as by the fimplicity of thofe *ftamens*, in the other part of their ftructure. All the fpecies abound with refinous dots on their *leaves*, *ftalks*, and *calyx*, lodging an effential oil, whofe qualities are more or lefs acrid and aromatic.

1. Z. *lanceolata*. Lanceolate Zieria. Brown MSS. (Z. Smithii; Andr. Repof. t. 606. Curt. Mag. t. 1395. Ait. Epit. 376.)—Clufters axillary, repeatedly three-forked. Leaflets lanceolate, flat, acute. Branches and ftalks warty.—Sent from Port Jackfon, New South Wales, by Dr. John White, in 1795. It is faid by Mr. Aiton to have been introduced into the Englifh gardens in 1803, where it proves a tolerably hardy green-houfe fhrub, flowering in the fpring and early part of fummer, and may be increafed from cuttings. The *ftem* is bufhy, of humble growth, being fcarcely three feet high, with round, purplifh, leafy *branches*, rough with glandular warts, and when young, befprinkled with minute, ftarry, rigid pubefcence. *Footftalks* warty, channelled, near an inch long, deftitute of *ftipulas*, each bearing three lanceolate, flat, entire, fmooth, fingle-ribbed *leaflets*, contracted at each end, the middle one rather the largeft, being two inches, or two and a half, in length. *Panicles* oppofite, axillary, often two together, fomewhat leafy, repeatedly forked, many-flowered, various in length, fpreading, flightly downy; their ftalks quadrangular, purplifh. *Flowers* white, each about the fize of a Privet-bloffom, with yellow *anthers*. *Capfules* brown, dotted with glands. Tunic of the *feeds* white and fhining. We agree with Dr. Sims in preferring an expreffive fpecific appellation to one taken from the name of a botanift, and, therefore, as the genus in queftion was not eftablifhed on this fpecies more than the reft, all, except the laft, having been equally confidered, we are happy to fet the example of an alteration, in which we can have no other motive than propriety and common advantage. We had called this fpecies *multiflora;* but we confider the fynonym in the Botanical Magazine as a publication of the unexceptionable name given by Mr. Brown.

2. Z. *lævigata*. Smooth Zieria.—Clufters axillary, three-forked, corymbofe. Leaflets linear, revolute. Branches and ftalks very fmooth.—Gathered by Dr. White, near Port Jackfon, New South Wales. The *branches* of this pretty fpecies are quadrangular, and very fmooth, like every other part, except the *petals*. *Leaves* fmaller than the foregoing, with fomewhat of a glaucous hue. *Footftalks* about half a quarter of an inch long. *Leaflets* fcarcely an inch, acute, polifhed, ftrongly revolute, dotted with glands, and fomewhat tinged with purple. *Flowers* a little larger than the laft, and much fewer, the *panicles* being always folitary, much lefs compound, and fituated chiefly towards the upper part of each branch. The *ftalks* are acutely quadrangular, and very fmooth. *Calyx* brown or reddifh, taper-pointed, likewife quite fmooth. *Petals* downy on both fides, like a piece of woollen cloth.

3. Z. *pauciflora*. Few-flowered Zieria.—Stalks axillary, with one or three flowers. Leaflets linear-obovate, fomewhat revolute. Branches and ftalks hairy. Segments of the calyx lanceolate, taper-pointed.—Sent from Port Jackfon, with the former, by Dr. White, in 1795. A fmall *fhrub*, with flender, round, fcarcely quadrangular, *branches*, which are more or lefs copioufly clothed with erect briftly hairs. *Leaves* about half the fize of the laft; their *leaflets* dilated upwards, and obtufe, a little crenate towards the end; copioufly dotted, rarely hairy, on the upper fide; fometimes very hairy beneath, but occafionally quite fmooth even in that part. *Flowers* very fmall, often quite folitary, on an axillary ftalk, with a pair of fmall acute *bracteas;* fometimes there are three flowers on each ftalk. Segments of the *calyx* broad at the bafe, but tapering fuddenly into a long point. *Petals* minutely dotted with tufts of ftarry hairs, giving them a warty, or granulated, afpect. *Capfules* tuberculated, fometimes hairy; curioufly reticulated at the infide. *Seeds* black, rather opaque, with a fhining, white, at length convoluted, tunic, whofe edge is minutely fringed. The hairy and nearly fmooth varieties of this plant look different at firft fight, but we cannot detect a fpecific diftinction.

4. Z. *cytifoides*. Downy Zieria.—Stalks axillary, three-forked, leafy. Leaflets obovate, entire, downy on both fides. Branches and ftalks downy.—Native of New South Wales, from whence we obtained a fpecimen through the favour of earl St. Vincent in 1805. Whether this be Mr. Brown's *arborefcens*, mentioned by Dr. Sims, we have at prefent no means of knowing, and therefore we are obliged to defcribe it by a name which appears to us very expreffive. Every part is clothed with fine denfe foft pubefcence, appearing ftellated and entangled under a high magnifier. *Branches* round. *Footftalks* half an inch long. *Leaflets* about an inch in length, entire, flightly revolute; their upper fide peculiarly foft and velvet-like; the under moft hoary. When held againft the light, they appear full of pellucid dots. *Calyx* very downy; its fegments broad and ovate. *Petals* about twice as long, and of the fame fhape, downy. We have not feen the ripe *fruit*.

ZIESAR, or ZIEGESAR, in *Geography*, a town of the Middle Mark of Brandenburg; 18 miles S.W. of Brandenburg.

ZIETZ, a town of the Middle Mark of Brandenburg; 10 miles S.W. of Brandenburg.

ZIEZAR, a town of Spain, in the province of Murcia; 22 miles N.W. of Murcia.

ZIFIUS, in *Ichthyology*, a name given by Albertus to the xiphias, or ſword-fiſh. See Xiphias.

ZIGADENUS, in *Botany*, a genus of Michaux, Boreal.-Amer. v. 1. 213. Purſh 241. The name, formed of ζυγος, *a yoke*, and αδην, αδενος, *a gland*, evidently alluding to the pair of glandular depreſſions in each petal, ought therefore to have been *Zygadenus*. We do not, however, believe that this genus can be ſeparated from Helonias. See that article.

The ſpecies are,

H. *glaberrima*. Smooth-leaved Helonias. Ker in Curt. Mag. t. 1680. (Zigadenus glaberrimus; Michaux as above; 214. t. 22. Purſh n. 1. Ait. Epit. 376.)—Leaves linear, channelled, recurved. Stalk leafy. Bracteas ovate, pointed as well as the petals.—In low meadows of Virginia and Lower Carolina, perennial, flowering in June and July. *Purſh*. *Root* bulbous. *Leaves* a ſpan long, concave, ſpreading. *Stalk* two feet high, bearing ſeveral, gradually diminiſhing, *leaves*, and terminating in a *panicle* of ſeveral greeniſh-white *flowers*, the ſize of *Veratrum album*, each of whoſe *petals* is marked, near the baſe, with a double glandular, apparently nectariferous, depreſſion. *Stamens* diſtinct from the petals. *Seeds* tunicated. We know not whether they be ſo in any other *Helonias*.

H. *elegans*. Elegant Helonias. (Zigadenus elegans; Purſh n. 2.)—Leaves linear, flat, erect. Stalk nearly naked. Bracteas linear. Petals acute.—On the waters of Cokahlaiſhkit river, near the Rocky Mountains, found by governor Lewis, flowering in July. Radical *leaves* erect, linear, very long, ſmooth, ribbed, flat. *Stalk* taller than the foliage, about two feet in height, round, ſimple, bearing one or two ſhort leaves. *Cluſter* many-flowered, occaſionally branched at the bottom. *Bracteas* as long as the partial ſtalks, membranous, ribbed. *Flowers* whitiſh, the ſize of *Melanthium virginicum*. *Petals* ovate, acute, with ſomething of a claw, marked at the baſe with two vermilion ſpots. *Filaments* ſhorter than the corolla. *Stigmas* three, reflexed. *Purſh*.

ZIGÆ, in *Ancient Geography*, a people of Aſiatic Sarmatia, on the bank of the Tanais. Pliny.

ZIGALOVKA, in *Geography*, a town of Ruſſia, in the government of Irkutſk; 16 miles N.W. of Tutura.

ZIGANEAH, a mountain of Algiers; 18 miles S. of Conſtantina.

ZIGANSK, a town of Ruſſia, in the government of Irkutſk, on the Lena; 1472 miles E. of Tobolſk. N. lat. 67°. E. long. 120° 32′.

ZIGEIRA, or Zigira, in *Ancient Geography*, a town of Africa Propria, between the town of Thabraca and the river Bagradas. Ptolemy.

ZIGER, a word uſed by ſome of the old writers to expreſs a very fine kind of caſſia, extremely aromatic to the taſte, and of a purpliſh-black colour.

ZIGERE, in *Ancient Geography*, a town of the interior of Thrace, on the borders of Lower Mœſia.

ZIGET, in *Geography*, a town of Hungary, ſituated between the ſtreams of a ſmall river, which unite below the town, and ſoon after run into the Drave. It is on every ſide ſurrounded by a moraſs, and defended by moats, walls, and baſtions; 44 miles S.E. of Caniſcha. N. lat. 46° 8′. E. long. 17° 56′.—Alſo, a river of Hungary, which runs into the Drave, 12 miles S. of Ziget.

ZIGIRA, in *Ancient Geography*, a town of Aſia, in Aſſyria, towards the N., and at a great diſtance from the Tigris. Ptol.

ZIGURELLA, in *Ichthyology*, the name by which ſome have called the julis, a ſmall but very beautiful fiſh, common about Genoa, and in ſome degree approaching to the nature of the turdus or wraſſe.

It is a ſpecies of the labrus, according to Artedi, and is diſtinguiſhed by the name of the palmaris labrus, with two large teeth in the upper jaw. See Labrus.

ZIGZAG Trefoil, in *Agriculture*, a term ſometimes applied by farmers to the perennial red clover, marl graſs, or wild red clover. See Clover and Trifolium *Purpureum Perenne*.

ZIKLAG, or Sicalag, in *Ancient Geography*, a city which Achiſh, king of Gath, gave to David, while he took ſhelter among the Philiſtines (1 Sam. xxvii. 6.), and which afterwards always belonged to the kings of Judah. Joſhua had allotted it to the tribe of Simeon. (Joſh. xix. 5.) Euſebius ſays, that it lay in the ſouthern part of Canaan.

ZILA, in *Geography*, a river of Moldavia, which runs into the Pruth, 30 miles S.E. of Jaſſy.

ZILEH, a town of Turkiſh Armenia; 30 miles S.S.W. of Arzingan.

ZILGA, a river of Ruſſia, which runs into the Oka, N. lat. 53° 4′. E. long. 101° 14′.

ZILIS, in *Ancient Geography*, a town of Africa, in Mauritania Tingitana, marked in Anton. Itin. 24 miles from Tingis, between Tabernæ and Ad Mercuri. This was a colony eſtabliſhed by Auguſtus, exempt from the juriſdiction of the kings of Mauritania, and dependent upon Bœtica in Hiſpania.

ZILKEFEL, in *Geography*, a town of the Arabian Irak; 18 miles S.W. of Helleh.

ZILLEBA, a town of Arabia, in the province of Yemen; 35 miles E. of Loheia.

ZILLER, a river of Tyrol, which runs into the Inn, 2 miles above Rattenburg.

ZILLY. See Cilly.

ZILMISSUS, in *Ancient Geography*, a hill of Thrace, on which was a temple dedicated to the god Sabadeus. Macrobius.

ZILTAN, in *Geography*, a town of Africa, in the deſert of Barca; 150 miles W. of Angela.

ZIMARA, in *Ancient Geography*, a town of Aſia, in the Greater Armenia, at the foot of mount Capotis, in the place where the Euphrates has its ſource.

Zimara, in *Geography*, a town of Aſiatic Turkey, in the government of Sivas; 55 miles E. of Sivas.

ZIMBAOA, or Zimbao, a town of Africa, in the kingdom of Sofala, and capital of Mocaranga. S. lat. 16° 40′. E. long. 33° 40′.

ZIMBRA. See Zowamore.

ZIMENT-Water, or Copper-*Water*, in *Natural Hiſtory*, the name by which ſome have called water found in places where there are copper-mines, and lightly impregnated with particles of that metal.

The moſt famous ſpring of this kind is about a mile diſtant from Newſol in Hungary, in the great copper-mine called by the Germans *herrn grundt*.

The water in this mine is found at different depths, and is received into baſons, for the purpoſe of ſeparating the copper from it; in ſome of theſe it is much more fated with this metal than in others, and will make the ſuppoſed change of iron into that metal much ſooner. The moſt common ſpecies of iron uſed in the experiments are, horſeſhoes, nails, and the like; and they are found very little altered in ſhape, after the operation, except that their ſurfaces are more raiſed.

The water appears greeniſh in the baſon where it ſtands; but if a glaſs of it be taken up, it looks clear as cryſtal: it has no ſmell, but a ſtrong vitriolic aſtringent taſte, inſomuch that the lips and tongue are bliſtered and ſcorched upon taſting it.

The miners are well acquainted with the virtue of this water in changing the metals; but they alſo uſe it as a medicine: whatever ſickneſs they are ſeized with, they firſt attempt its cure by a large doſe of this water, which uſually both vomits and purges them very briſkly.

They alſo uſe it in diſorders of the eyes, in ſome of which it muſt be of great power; but in others, it is very improper; ſo that upon the whole they do more harm than good with it.

The copper produced from theſe waters is valued by the people much beyond any other copper, as being much more ductile, and running eaſier in the fire: the people in the neighbourhood have many veſſels of it; but it is to be obſerved, that its ductility and hardneſs increaſe after it is taken out of the water; for while immerſed in it, it is friable.

It is obſerved, that after great rains the ſprings are always fuller than at other times, and the virtues of the water conſiderably leſs.

A pound of this water, when ſtrongeſt, evaporated over a gentle fire, becomes firſt turbid, and afterwards depoſits a yellowiſh ſediment, which evaporated to dryneſs, weighs two ſcruples and a half; and when warm water is poured upon this and filtered, ſix grains of yellowiſh earth will be left in the filtre; and the greeniſh ſolution being again evaporated to a pellicle, and the operation being ſeveral times repeated, ſomewhat more than two ſcruples of a blueiſh-green vitriol will be ſeparated in ſmall cryſtals.

A ſmall quantity of oil of tartar being added to a pound of this water, the whole becomes turbid, and on filtration leaves a large reſiduum in the filtre, which dried, weighs about two ſcruples and a half, and is found to be a cupreous vitriol, with a ſmall mixture of a neutral ſalt. If a pint of this water be put into a bottle, and a ſmall piece of iron thrown into it, bubbles will appear on the iron, which will gradually be changed to a copper colour. On the ſecond day, the water will be turbid, and afterwards whitiſh, and white filaments will gather about the bottom and ſides of the glaſs, and about the iron, which will appear throughout of a coppery colour. From theſe experiments, we may eaſily underſtand what the true nature of the water is; that it contains a large quantity of vitriol of copper, which it probably owes to a ſolution of that metal, by means of the acid of the common pyrites and water: when this is known, the effects are not difficultly accounted for, there being no real change of one metal into another; but the true ſtate of the caſe being, that the particles of one metal are diſſolved and carried away, and thoſe of another metal depoſited in their place. A water thus impregnated is a menſtruum capable of diſſolving iron, and in the ſolution of that metal becomes ſo weakened as to let go the copper it before contained in ſmall parcels. This is ſeen to be the caſe, by examining the changed metal while it lies in the water, the copper then appearing not a ſoft malleable and even maſs, but a congeries of granules cloſely placed together, and reſembling the ſmall granules, or ova, in the ſpawn of fiſhes; and it is very friable and fragile while in this ſtate.

This ſolution of one metal, and depoſition of the particles of another in its place, is a thing very familiar in chemiſtry, and is ſeen every day in numerous inſtances; but in none ſo familiar as in a like caſe, or ſolution of iron and copper in the ſame menſtruum. Thus, if a piece of copper be diſſolved in aqua fortis, and when this ſolution is perfected a piece of iron be thrown into the liquor, the ſame thing will be ſeen that is in this ſpring, for the iron will be diſſolved, and the copper which was before diſſolved in the menſtruum will be ſlowly precipitated and depoſited in the place of it. Phil. Tranſ. N° 479, p. 355, &c. See on this ſubject the articles Copper and Vitriol.

ZIMEX, a word uſed by ſome of the old chemical writers for verdigriſe.

ZIMITI, in *Geography*, a town of South America, in the province of Carthagena, near a lake; 60 miles S. of Santa Fé de Bogota. N. lat. 7° 42′. W. long. 74° 6′.

ZIMMER, an iſland of the Red ſea, much ſmaller than *Fooſht*, (which ſee,) without inhabitants, and without water; though, by the ciſterns that now remain, and are ſixty yards ſquare, hewn out of the ſolid rock, there is reaſon to imagine that this was once a place of conſequence: rain, at certain ſeaſons, falls here in abundance. It is covered with young plants of rack-tree, whoſe property it is to vegetate in ſalt water. It has alſo a conſiderable number of Saiel, or Acacia-trees. In this iſland there are antelopes and hyænas; and hence we may infer that water, without which theſe animals could not ſubſiſt, is found in ſome ſubterranean caves or clifts of the rocks, unknown to the Arabs or fiſhermen. Mr. Bruce found here plenty of the large ſhell-fiſh called Biſſer and Surrumbac, but no other. Fooſht bears from this iſland 8 miles N.W. by N. ¼ W. N. lat. 16° 7′.

Zimmer, in *Commerce*, a term uſed for reckoning in Germany, and denoting 40 pieces.

ZIMMERBACH, in *Geography*, a town of France, in the department of the Upper Rhine; 5 miles W. of Colmar.

ZIMMERMAN, John George, in *Biography*, an eminent phyſician and miſcellaneous writer, was born in 1728 at Brug, in the canton of Bern. Having completed his preparatory education at Bern, and choſen the medical profeſſion, he placed himſelf in the univerſity of Gottingen, under the tuition of the celebrated Haller; and on graduating in 1751, the ſubject of his theſis was the doctrine of irritability. His reſpect for Haller was teſtified in the account he gave of him in the journal of Neufchatel, printed in 1752. Having married at Bern a relation of Haller, he ſettled as a phyſician in his native town. The retirement of his ſituation afforded him an opportunity of compoſing many pieces in proſe and verſe; and in 1756 he publiſhed the firſt ſketch of his popular work "On Solitude." This publication was followed by an eſſay "On National Pride," in 1758; by his work "On the Experience of Medicine," in 1763, and ſeveral others; and by "A Treatiſe on Dyſentery," in 1766. In 1768 he accepted an invitation to occupy the vacant poſt of phyſician to the king of England for Hanover, whither he removed. In this ſituation, the accumulation of buſineſs furniſhed in ſome meaſure an antidote to that conſtitutional irritability of temper, and tendency to hypochondriacal complaints, which in the retirement of a ſmall town had rendered him unhappy; and having occaſion to place himſelf under the medical care of a ſurgeon at Berlin, on account of a local diſeaſe under which he laboured, his removal thither in 1771, and the notice that was taken of him by ſeveral perſons of diſtinction, and even by the king, were favourable both to his health and ſpirits, and of courſe to his happineſs. Having loſt his firſt wife, he formed a ſecond matrimonial connection in 1782; and to this union he was indebted for many of thoſe comforts which counterbalanced and alleviated his afflictions. His remaining years were chiefly devoted to the completion of his work "On Solitude," which was publiſhed in four volumes. In the year 1786, Zimmerman was ſent for to attend the great Frederick in his laſt illneſs; and this

this visit gave him an opportunity of publishing an account of his "Conversations" with that celebrated prince. He was induced also, by the notice that was taken of him, to undertake a defence of the character of Frederick against the censures of count de Mirabeau. The severe criticisms to which these writings exposed him, and the part he took in the controversies that agitated the continent with regard to the principles that produced the French revolution, irritated his feelings and disquieted a mind like his peculiarly susceptible of contumely and reproach. His political and religious principles led him to view with jealousy and detestation those societies which, in his judgment, and in that of others of similar sentiments, aimed at the subversion of established forms and authorities, and to declare war against them. Such were his abhorrence and dread of them, that he addressed a memoir to the emperor Leopold, recommending the suppression of them by force; and he subjected himself to a prosecution for a libel by a charge brought against a person by name for an unavowed publication. His mind had arrived to such a state of irritation, that the approach of the French towards Hanover in 1794 almost subverted his reason. Dreading the consequences of their arrival, he abstained from food, wasted to a skeleton, and died absolutely worn out in 1795, at the age of 66. "Such," says his biographer, "was the melancholy end of a man whose moral and intellectual qualities rendered him in a high degree the object of private friendship and public esteem." Tissot's Life of Zimmerman. Gen. Biog.

ZIMOVE, in *Geography*, a village of Russia, in the government of Irkutsk, where is a custom-house; 52 miles S.E. of Barguzinsk.

Zimove *Tchiskoi*, a town of Russia, in the government of Irkutsk; 16 miles S.W. of Vitimskoi.

Zimove *Yasaschnoe*, a winter habitation of Russia, on the N. coast of Baikal lake, in the government of Irkutsk. The word *Zimove*, in Russian, means a house or inn, built at a distance from a town, for the accommodation of travellers, where are generally found a warm room, fresh bread, and a kind of liquor called *quass*. N. lat. 55° 20′. E. long. 109° 14′.

Zimove *Zaminskoi*, a town of Russia, in the government of Irkutsk, near lake Baikal; 76 miles S.E. of Vercholensk.

ZIMOVSKAIA, a town of Russia, in the country of the Cossacks, on the Choper; 48 miles W. of Arkadinskaia.

ZIN, Sin, or *Senna*, in *Ancient Geography*, a city S. of the land of promise. (Numb. xxxiv. 4.) See Sin.

ZINARI, in *Geography*, an island in the Grecian Archipelago. N. lat. 36° 59′. E. long. 26° 10′.

ZINARIA, a word used by the Arabians for a kind of vitiated bile, called æruginous bile.

ZINC, in *Chemistry*, the name of a metal, in Latin *zincum*. The ancients do not appear to have been acquainted with this metal. *Cadmia* was the name by which they seem to have known one of its ores, which was so called from Cadmus, who, it is said, taught the Greeks how to form brass by its means. It is first mentioned by Albertus Magnus, but it is doubtful if he had ever seen it. The word *zinc* first occurs in the writings of Paracelsus. This metal has been also called *spelter*.

Zinc has never been found in Europe in a state of purity, and chemists were late in discovering a method of extracting it from its ores. Henkel seems to have been one of the first who effected this about the year 1720, and he was soon followed by others. Zinc is of a brilliant white colour, with a shade of blue, and seems to be composed of a number of thin plates adhering together. It imparts a perceptible smell and colour to the skin when rubbed by it for some time; hence it is rather soft. Its specific gravity is said to vary from 6.86 to 7.1, the lightest being esteemed the purest. When hammered, its specific gravity becomes as high as 7.19.

This metal is by no means so malleable as copper, lead, or tin; it is not however brittle. It yields, and becomes somewhat flatter, when struck with a hammer. When heated a little above 212°, it has the remarkable property of becoming very malleable, and in this state may be reduced into very thin plates, either by hammering or rolling. When heated to about 400°, it becomes so brittle that it may be reduced to powder in a mortar.

Zinc may be drawn into wire. According to Muschenbroeck its tenacity is such, that a wire of $\frac{1}{10}$th of an inch in diameter is capable of supporting a weight of about 26 lbs.

Zinc melts at a temperature of about 680°, according to Dr. Black. If the heat be increased it evaporates, and may be easily distilled over in close vessels: upon this property of zinc, Von Swab's method of extracting it from its ore was founded. When allowed to cool slowly, this metal crystallizes beautifully in small bundles of quadrangular prisms disposed in all directions, which, if exposed to the air while hot, assumes a blue changeable colour.

When exposed to the air, zinc soon tarnishes, but it scarcely undergoes any other change. When kept under water, its surface becomes black, the water is decomposed, hydrogen is emitted, and the oxygen combines with the metal. If heat be applied, these changes go on more rapidly; and if the steam of water be made to pass over zinc at a high temperature, it is very rapidly decomposed.

When this metal is kept melted in open vessels, it soon becomes covered with a grey pellicle of oxyd. If the heat be very strong it takes fire, and burns with a brilliant white flame, and at the same time emits a great quantity of very light white flakes. This is merely the oxyd of zinc. It was well known to the ancients, and received from them many whimsical names, such as *pompholyx*, &c. Among the alchymists it was known by the names of *nihil album*, *lana philosophica*, *flowers of zinc*, &c.

Zinc appears to combine with only one proportion of oxygen, which has been stated by different chemists to vary from 24.16 to 25 of oxygen to 100 of the metal. According to the first of these determinations, the weight of the atom of zinc will be 41.39; according to the second 40. Dr. Thomson has decided upon 41.25 as the most probable weight of the atom.

Zinc combines readily with chlorine, and forms a chloride of zinc. It may be prepared by dissolving zinc in muriatic acid, or by exposing the metal to the gas, when the two combine by a species of combustion. The chloride may be also obtained by distilling zinc-filings with the oxy-muriate of mercury, or *corrosive sublimate;* and thus obtained, it was formerly denominated the *butter* of zinc. When thus prepared, it sublimes on the application of heat, and crystallizes in needles; but according to Dr. Davy, when the common muriate is heated in a glass tube, it does not sublime even at a red heat, but remains in a state of fusion. Exposed to the air, it soon deliquesces. According to Dr. J. Davy's analysis, it is composed of

Chlorine - - -	100
Zinc - - - -	100

But if we suppose it to be composed of an atom of zinc and

and an atom of chlorine, and the atom of zinc to weigh as above, its conſtituents ſhould be

Chlorine - - -	100
Zinc - - - -	91.6

Zinc readily combines with iodine by heat. The compound, or *iodide*, is white. It is volatile, and cryſtallizes in fine quadrangular priſms. It deliqueſces in the air, and is very ſoluble in water. The ſolution is colourleſs, and does not cryſtallize. Gay Luſſac has ſhewn, that this compound conſiſts of one atom iodine, and one atom zinc, or by weight of

Iodine - - -	100
Zinc - - - -	26.52

No compound of zinc with fluorine is at preſent known. Zinc does not combine with azote nor hydrogen; nor are we acquainted with any compound of this metal with boron and ſilicon.

Zinc may be combined with phoſphorus by dropping ſmall bits of phoſphorus into it while in a ſtate of fuſion. Phoſphuret of zinc is of a white colour, and poſſeſſes a metallic luſtre, which more reſembles lead than zinc. It is ſomewhat malleable. It emits the odour of phoſphorus when filed or hammered, and if expoſed to a ſtrong heat it burns like zinc. Phoſphorus alſo appears to combine with the oxyd of zinc, and to form a peculiar compound.

Sulphur cannot be combined artificially with zinc; but if melted with the oxyd of zinc a peculiar compound is formed. A ſimilar compound is formed when ſulphuretted hydrogen in combination with an alkali is dropped into a ſolution of zinc. It is at firſt white, but becomes darker on drying. Dr. Thomſon conſiders this compound as a ſulphuret of zinc. Mr. E. Davy aſcertained, that when the vapour of ſulphur is paſſed over zinc in fuſion a yellowiſh compound is obtained, ſimilar in appearance to blende.

One of the moſt common ores of zinc is *blende*, deſcribed below, and which is a ſulphuret of zinc, compoſed, according to Dr. Thomſon's experiments, of

Zinc - - - -	100
Sulphur - - -	48.84

Hence he conſiders it as a compound of one atom zinc, and one atom ſulphur.

The alloys of zinc and the metals of the fixed alkalies are ſpeedily decompoſed by expoſure to the air or immerſion in water. We are not acquainted with the alloys of zinc and the metallic baſes of the alkaline earths.

Zinc may be combined with arſenic by diſtilling a mixture of it and arſenious acid. With iron, zinc combines with difficulty; the alloy when formed, according to Lewis, is hard, ſomewhat malleable, and of a white colour, like ſilver. Malouin has ſhewn, that zinc may be uſed inſtead of tin for covering iron plates; a circumſtance which demonſtrates an affinity between the two metals.

Zinc does not appear capable of combining with nickel or cobalt by fuſion. The alloys of zinc with mangaueſe, cerium, and uranium, are unknown.

For the other alloys of zinc, ſee the different metals; particularly for the moſt important of them or braſs, ſee Brass and Copper.

Salts of Zinc.—Almoſt all the acids act with energy on zinc, in conſequence of its powerful affinity for oxygen. The ſalts of zinc, therefore, are very eaſily formed, and on account of their being but one oxyd of zinc are not much liable to variation.

Nitrate of Zinc.—The nitric acid attacks zinc with ſuch energy, that it is commonly neceſſary to moderate its action by diluting it with water. Even then much heat is evolved, and a ſtrong effervеſcence is produced by the eſcape of nitrous oxyd gas. The ſolution is tranſparent and colourleſs, very cauſtic, and yields by evaporation flat, ſtriated, tetrahedral priſms, terminated by four-ſided pyramids. Theſe cryſtals attract moiſture on expoſure to the air, and are ſoluble in water and alcohol. When heated they melt, and if thrown on burning coals, detonate with a red flame.

Carbonate of Zinc.—*Calamine*, one of the ores of zinc, is a native carbonate of zinc, as deſcribed below. This ſalt uſually exiſts in the form of a white powder, and may be obtained by precipitating zinc from its ſolution in acids by an alkaline carbonate.

Phoſphate of Zinc.—The phoſphoric acid unites in two proportions with the oxyd of zinc. The neutral phoſphate is a taſteleſs white powder inſoluble in water. The biphoſphate is ſoluble in water, if not expoſed to too great a heat. It does not cryſtallize, and is ſtrongly acid.

Sulphate of Zinc.—Concentrated ſulphuric acid ſcarcely acts upon zinc without the aſſiſtance of heat; but when diluted it acts upon the metal very ſtrongly, and hydrogen gas is given out in abundance. In this caſe, the water is decompoſed, its oxygen combines with the metal, while its hydrogen eſcapes. The ſolution, when concentrated, yields cryſtals in abundance.

This ſalt, formerly known under the name of *white vitriol*, was diſcovered in Germany, about the middle of the 16th century. When quite pure, it is perfectly white. The form of its cryſtals is that of flat quadrangular priſms, terminated by four-ſided pyramids. At a temperature of 60°, it diſſolves in about 1.4 times its weight of water. In boiling water, it diſſolves in any quantity whatever. The conſtituents of this ſalt are,

1 Atom of ſulphuric acid - -	31.74
1 Atom of zinc - - -	32.54
5 Atoms of water - - -	35.72
	100.00

When heated, the cryſtals part with their water, and if the heat be ſtrong, the whole of the acid likewiſe ſeparates, and leaves the oxyd of zinc in a ſtate of purity. See Vitriol, *White*.

Muriate of Zinc.—See *Chloride of Zinc, ſupra.*

Sulphite of Zinc.—This ſalt exiſts in the form of cryſtals, ſoluble in water, but inſoluble in alcohol. On expoſure to the air, they are ſoon converted into the ſulphate of zinc. Fourcroy and Vauquelin deſcribe a *hypo-ſulphite* of zinc, which aſſumes the form of four-ſided priſms, terminated by four-ſided pyramids. They are ſoluble in water and alcohol.

Borate of Zinc is a white inſoluble powder. It may be formed by pouring borate of ſoda into the nitrate or muriate of zinc.

Arſeniate of Zinc is a white inſoluble powder, and may be formed by mixing ſolutions of the alkaline arſeniates with the ſulphate of zinc.

Acetate of Zinc.—This ſalt exiſts in the form of rhomboidal or hexagonal plates of a talky appearance, and is not very ſoluble in water. Solutions of this ſalt form an excellent external application to inflammations.

Oxalate of Zinc.—This ſalt is a white powder, little ſoluble in n water, and may be formed readily by double decompofition.

Tartrate and Citrate of Zinc. — Both thefe falts exift ufually in the form of powders, and are but little foluble in water. They may be procured, like the oxalate, by double decompofition.

The other falts of zinc are of very little importance or intereft, and do not therefore merit to be enumerated here. The falts of zinc may be diftinguifhed in general by their forming colourlefs folutions in water, by their yielding white precipitates with pruffiate of potafh, fulphuretted hydrogen, and the alkalies, and by the characteriftic circumftance that zinc is not precipitated in the metallic ftate by any other metal.

Ufes of Zinc and its Compounds.—Neither this metal nor its compounds, if we except *brafs*, are much employed in the arts nor in medicine. A chief ufe of zinc is in the formation of galvanic apparatus, and in electrical experiments. (See GALVANISM and ELECTRICITY.) As it is not a poifonous metal, it has been recommended inftead of tin and lead for domeftic purpofes; but the eafe with which it is oxydized makes it very unfit for all forts of culinary apparatus.

The ftrong affinity of zinc for oxygen renders it of great ufe as a chemical agent for precipitating other metals from a ftate of folution in the metallic ftate. The oxyd of zinc is ufed in medicine, both internally as a tonic, and externally mixed with hog's-lard as an ointment. The native carbonate is alfo ufed in the fame manner as an external application. See UNGUENTUM *Calamine*, and UNGUENTUM *Zinci.*

The *fulphate* and the *acetate* are the only falts of zinc ufed in medicine; for the properties of which, fee above.

ZINC, *Ores of*, in *Mineralogy.* The ores of zinc are generally affociated with lead-ores, and exift abundantly in various parts of England; particularly in veins in the mountain lime-ftone of Derbyfhire, Durham, Cumberland, Yorkfhire, Somerfetfhire, and North Wales. The ores of zinc are either oxyds, carbonates, or fulphurets of zinc, and are principally known as calamine or blende. There is an ore of zinc hitherto found only in North America, called by Dr. Bruce red zinc-ore; it occurs in feveral of the iron-mines in Suffex county, New Jerfey.

Red Zinc Ore is of a blood-red or aurora-red colour: it occurs maffive and differninated. The frefh fracture is fhining, but becomes dull after long expofure to the air, and is covered with a pearly cruft; the principal fracture prefents a foliated ftructure; the crofs fracture is conchoidal. It is opaque or tranflucent on the edges; it yields a brownifh-yellow or orange ftreak; it is brittle. The fpecific gravity is 6.22. It is infufible without addition by the blow-pipe, but melts into a tranfparent yellow bead with borax. When pounded and mixed with potafh, and expofed to heat, it melts into an emerald-green mafs, which, on folution in water, yields the fame colour; but on the addition of the mineral acids is immediately changed to rofe-red. This ore is foluble in the mineral acids. Its conftituent parts are,

Zinc - - - - -	76
Oxygen - - - - -	16
Oxyds of manganefe and iron	8
	100

Bruce's American Mineralogical Journal, p. 69.

According to Dr. Bruce, this ore poffeffes advantages in the manufacture of brafs over thofe generally ufed; for without any previous preparation, it affords with copper brafs of the very fineft quality, poffeffing a high degree of malleability, and fuited for the moft delicate workmanfhip. Red zinc-ore is characterized and diftinguifhed from red filver-ore and red lead-ore by its infufibility; the latter melting into a blackifh flag before the blow-pipe. Red orpiment, with which it might be confounded, is diftinguifhed from red zinc-ore by its volatility, and the garlic fmell which it yields. This ore of zinc has greater fpecific gravity than red copper-ore, and its folution in acids is colourlefs; but thofe of red copper are green. Calamine is divided by fome mineralogifts into four kinds, fparry calamine, compact calamine, earthy calamine, and electric calamine.

Sparry Calamine: Zinc Carbonaté, Haüy.—Its colours are greyifh and yellowifh-white, and fometimes green and reddifh-brown. It occurs maffive, botryoidal, cellular, ftalactitic, and cryftallized, in acute and obtufe rhomboids, and in longifh quadrilateral tables: the cryftals are fmall. The luftre of fparry calamine is between refinous and vitreous. The ftructure is imperfectly lamellar, and fometimes radiated. It is tranflucent, or more or lefs tranfparent; it yields eafily to the knife. The fpecific gravity is 4.3. It is infufible before the blow-pipe, and lofes about 34 *per cent.* by ignition. With muriatic acid it effervefces, and is diffolved. According to Smithfon, the conftituent parts of this ore from Derbyfhire are,

Oxyd of zinc - -	65.2
Carbonic acid - -	34.8
	100.

From Somerfetfhire,

Oxyd of zinc - -	64.8
Carbonic acid - -	35.2
	100.

Compact Calamine: Zinc Carbonaté, Haüy.—Its colours are, greyifh, greenifh, or yellowifh, and often brown, from an intermixture with iron. It occurs maffive, botryoidal, differninated, ftalactitical, reniform, and mamillated: it has a dull, feebly gliftening, refinous luftre. The fracture is uneven and coarfe-grained, or fplintery, and fometimes even a flatty conchoidal. It fometimes occurs in concentric lamellar concretions: it is opaque. Its chemical characters and conftituent parts are the fame as of the fparry calamine, thefe minerals being only varieties differing in form from each other.

Earthy Calamine: Zinc Carbonaté, Haüy.—It is of a greyifh or yellowifh-white colour, fometimes fnow-white; externally it is frequently covered with a tint of yellowifh-brown. It occurs maffive, and coating other minerals; it is opaque, and has an earthy fracture; it yields to the nail, and adheres to the tongue. The fpecific gravity is 3.358. According to Smithfon, the conftituent parts are,

Oxyd of zinc - -	71.4
Carbonic acid - -	13.5
Water - - -	15.1
	100.

Electric Calamine: Zinc Oxydé, Haüy.—Its prevailing colours are, greyifh, blueifh, or yellowifh-white; externally it is fometimes brownifh or blackifh. It occurs cryftallized, mamillated, botryoidal, ftalactitical, and maffive. The cryftals are fix-fided prifms, with dehedral fummits, or acute octahe-

octahedrons; ſometimes truncated on the ſummits. The cryſtals are ſmall, and either ſolitary, or radiating in groups, like zeolite. The luſtre is ſhining, gliſtening, and vitreous: the ſtructure is imperfectly lamellar, or divergingly fibrous. It is ſometimes opaque, and ſometimes tranſlucent or tranſparent: it yields to the knife, but is much harder than common calamine. The ſpecific gravity is 3.4. When gently heated it is ſtrongly electric; it is infuſible, and loſes about 12 *per cent.* by ignition. It is ſoluble in muriatic acid with effervеſcence: the ſolution gelatinizes on cooling. According to Klaproth, its conſtituent parts are,

Oxyd of zinc - - -	66
Silex - - - - -	33
	99

According to Smithſon,

Oxyd of zinc - -	68.3
Silex - - - - -	25.
Water - - - - -	4.4
	97.7

Calamine ſometimes occurs in what are called ſuppoſititious cryſtals, as if it had been moulded over cryſtals of other minerals, and the internal cryſtal had diſappeared. In Derbyſhire, the working miners are of opinion, that the calamine deſtroys the lead-ores when they occur together; or, as they expreſs it, the calamine eats up the lead. That ſome proceſs of decompoſition or change takes place where theſe ores are aſſociated there can be no doubt; but by what means this is effected we are at preſent ignorant. See VEINS, *Metallic.*

Calamine, commonly called lapis calaminaris, when cleaned and roaſted, is uſed for the fabrication of braſs, forming a compound with copper. (See BRASS.) Its uſes in the making of braſs is of very high antiquity, being mentioned by Ariſtotle.

Calamine is alſo the moſt valuable ore from which metallic zinc is extracted.

The uſes of calamine were not known in England before the reign of queen Elizabeth, and even ſo late as the year 1700 it was commonly carried out of the kingdom as ballaſt by the ſhips which traded to Holland. The calamine raiſed in Derbyſhire about the year 1780 amounted to 1500 tons. Sixty years before that time the quantity got did not exceed 40 tons, the greater part being thrown away through ignorance of its nature and value.

The dreſſing of calamine conſiſts principally in picking out all the pieces of lead-ore, lime-ſtone, iron-ſtone, heavy ſpar, and other minerals mixed with it in the mine. The picked calamine is then calcined in proper furnaces, and loſes by calcination between a third and fourth part of its weight, which is the carbonic acid. In great works, where calamine is prepared for the braſs-makers, after its calcination, it is carefully picked again, the accidental ingredients being rendered more diſcernible by the action of fire. It is afterwards ground to a fine powder, and waſhed in a gentle rill of water, to free it from earthy particles with which it may be intermixed; for theſe being lighter are carried off by the water: it is then made up for ſale.

A ton of the crude Derbyſhire calamine, as dug from the mine, is reduced, by the various proceſſes it undergoes before it becomes fit for uſe, to about twelve hundred weight. Part of the zinc is loſt in calcination, particularly if too ſtrong a fire be made: this is evident by the flame viſible over the furnace. It would be practicable to uſe calamine without calcining it, for the carbonic acid would be expelled by the heat applied in making braſs; but then there would be ſeven or eight hundred weight put into the braſs pots which would be of no uſe in the operation: it is therefore better to get rid of ſo large a quantity of unſerviceable matter, and thereby avoid alſo an increaſed expence of carriage from the calamine-furnace to the places where the braſs is made. Watſon's Chemical Eſſays, vol. iv.

Blende compriſes various ſulphurets of zinc, differing in the proportion of their conſtituent parts, and the admixture of other mineral ſubſtances.

Yellow Blende, or Phoſphoreſcent Blende: Zinc Sulphuré Jaune, Brongniart.—The prevailing colours of this ore are yellow, paſſing into green, and ſometimes hyacinth-red, aurora-red, or browniſh-red. It occurs maſſive, diſſeminated, and cryſtallized. The cryſtals are generally ſmall, middle-ſized, and ſo cloſely aggregated, that it is difficult to determine the preciſe figure, which appears either the rhomboidal, the dodecahedron, the octahedron, or the tetrahedron. Yellow blende is tranſlucent, paſſing into tranſparent, and has a ſplendent adamantine luſtre. It yields to the knife, and affords a yellowiſh-grey or yellowiſh-white ſtreak: it is brittle. The ſpecific gravity rather exceeds 4: according to Karſton, it is 4.1.

It decrepitates before the blow-pipe, and becomes grey; but is infuſible either alone or with borax. By friction it becomes phoſphoreſcent, and, according to Bergman, acts as powerful in this reſpect in water as in air.

Foliated Brown Blende: Zinc Sulphuré Brun, Brongniart.—It is of a reddiſh or yellowiſh-brown, paſſing into blackiſh-brown and dark red. It occurs maſſive, diſſeminated, and cryſtallized. The form of the cryſtals is a rhomboidal dodecahedron, either perfect or truncated on the alternate lateral angles and edges, or an octahedron, either perfect or truncated. It occurs alſo in tetrahedrons, perfect or truncated, and in rectangular four-ſided priſms, ſix-ſided priſms, and acicular cryſtals. Sometimes the cryſtals are joined, forming a twin cryſtal. The luſtre is ſhining or ſplendent, and either reſinous, adamantine, or ſemi-metallic; it has a ſtraight lamellar ſtructure, with a cleavage in ſix directions. It is more or leſs tranſlucent; it yields to the knife, and affords a yellowiſh-grey or yellowiſh-brown ſtreak; it is brittle, and eaſily frangible. The ſpecific gravity of this ore varies from 3.7 to 4. It is infuſible, and yields an hepatic odour when digeſted in ſulphuric acids. The conſtituent parts of blende are given as under; but ſome varieties of foreign blende contain ſilex, arſenic, and mangancſe, which may be regarded as accidental.

Blende from Satilberg, according to Bergman:

Zinc - - - -	44
Iron - - - -	5
Sulphur - - - -	17
Silex - - - -	24
Alumine - - -	5
Water - - - -	5
	100

From Allonhead, in Northumberland, according to Dr. Thomſon:

Zinc - - - -	58.8
Iron - - - -	8.4
Sulphur - - -	23.5
Silex - - - -	7.
	97.7

Fibrous

Fibrous Blende.—The colour is reddiſh-brown: it occurs reniform and maſſive. The ſtructure is divergingly fibrous in one direction, and concentric lamellar in the other: its luſtre is reſinous; it is opaque or faintly tranſlucent at the edges; it agrees in other characters with foliated blende. The conſtituent parts are given as under in the Journal des Mines, t. xlix. No. 13.

Zinc - - - -	62
Iron - - - -	3
Lead - - - -	5
Arſenic - - - -	1
Sulphur - - - -	21
Alumine - - - -	2
Water - - - -	4
	98

Black Blende: Zinc Sulphuré Noir, Haüy.—It is of a greyiſh or velvet-black colour, and ſometimes browniſh-black. When tranſlucent, it appears blood-red; it is ſometimes tarniſhed with various colours. It occurs maſſive, diſſeminated, and cryſtallized, in the ſame forms as brown blende; internally it is ſhining, ſometimes ſplendent; and the luſtre is adamantine, inclining to metallic. It has a foliated ſtructure, and ſix-fold cleavage. The fragments are angular, and rather ſharp-edged. It is almoſt always opaque. The ſtreak is intermediate, between yellowiſh-grey and lightiſh-brown: it is eaſily frangible. The ſpecific gravity varies with the admixture of ingredients in this ore, from 3.9 to 4.1. Auriferous blende from Nagyag, as given by Muller, is 5.39. The conſtituent parts of black blende are as under:

Zinc - -	45	53
Iron - -	9	12
Lead - -	6	0
Arſenic - -	1	5
Sulphur - -	29	26
Silex - -	4	0
Water - -	6	4
	100	100

Blende is diſtinguiſhed from tin-ſtone by its inferior hardneſs; it yields pretty eaſily to the knife. It may be diſtinguiſhed from other ores which reſemble it, by the ſulphureous odour which it yields when thrown into an acid, or triturated in a mortar. The common name given to this ore by the Engliſh miners is Black Jack. It frequently occurs in the upper part of the metallic veins in Cornwall, that are rich in other ores below. Blende is not ſo valuable an ore of zinc as calamine: it muſt be freed from its ſulphur by calcination before it can be applied to the making of braſs. Some blendes loſe one-fourth of their weight, others one-ſixth by calcination. It has been for many years uſed for making braſs at Briſtol as well as calamine; but ſo little was this application of it known in other parts of the kingdom, that in the year 1777 we are informed by Dr. Watſon, in his Chemical Eſſays, that its uſe in Derbyſhire was but recently diſcovered; and he was requeſted not to divulge the purpoſe to which it might be applied, probably to evade the dues on minerals payable to the duchy court of Lancaſter.

ZINCHI, or ZICCHI, in *Ancient Geography*, a people of Aſiatic Sarmatia, upon the coaſt of the Euxine ſea, and ſeparated from the Sanichæ, by the river Achæus. Arrian.

ZINCKGRABEN, in *Geography*, a town of Bavaria, in the biſhopric of Bamberg; 5 miles E. of Lichtenfels.

ZINDIKITES, a ſect among the Mahometans; ſo denominated from their leader Zindik, whom Grotius makes to be one of the magi, and a follower of Zoroaſter.

The Zindikites believe no providence nor reſurrection: they allow no other God but the four elements; and, in this ſenſe, they aſſert, that man, being a mixture of thoſe ſimple bodies, returns to God when he dies.

ZINDINSKAIA, in *Geography*, a fort of Ruſſia, on the confines of China, in the government of Irkutſk; 80 miles S. of Selenginſk.

ZINETUS, a word uſed by Paracelſus as a name for one of the braſs-like marcaſites.

ZINGANE-IS-KELESI, in *Geography*, a town of European Turkey, in Romania; 6 miles S. of Burgas.

ZINGAR, a word uſed by ſome of the chemical writers for verdigriſe; and by others for the flos æris, or flowers of copper or braſs.

ZINGHA, in *Geography*, a town of Africa, in Whidah; 20 miles N.W. of Sabi.

ZINGI, in the *Materia Medica*, the name of a ſeed, ſometimes alſo called the aniſum ſtellatum, or ſtarry-headed aniſe.

ZINGIBER, in *Botany*, ζιγγιβερις of Dioſcorides, a name which the Greeks ſeem to have taken, when they obtained the plant itſelf, from the Arabians. Gærtner, diſſatisfied with Linnæus's application of the ancient name *Amomum*, to a genus of the *Scitamineæ*, under which they both of them confounded very different things, ſubſtituted *Zingiber* in its place, as undoubtedly belonging to one or other of the ſpecies. But ſince this tribe, and its generic diſtinctions, have been cleared up by Mr. Roſcoe, it becomes neceſſary to diſcriminate between *Amomum* and *Zingiber*, and conſequently both names are employed.—Roſcoe Tr. of Linn. Soc. v. 8. 347. Dryandr. in Ait. Hort. Kew. v. 1. 5. (Amomum; Lamarck Illuſtr. t. 2. f. 3.)—Claſs and order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. Brown. *Cannæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, ſheathing, membranous, ſplitting at one ſide. *Cor.* of one petal: tube twice the length of the calyx, a little ſwelling upwards: outer limb ringent; the upper lip undivided; lower in two deep, equal, deflexed ſegments: inner limb a large, ſpreading, three-lobed lip, of which the middle ſegment is the largeſt, all of them more or leſs wavy and crenate. *Stam.* Filament one, erect, oblong, extended beyond the anther in an awl-ſhaped incurved beak, involute at the edges, embracing the ſtyle; anther attached by its back, below the beak of the filament, oblong, of two cloſe, parallel, linear lobes, meeting round the ſtyle, burſting in front. *Piſt.* Germen inferior, roundiſh, ſmall, crowned with a pair of glands; ſtyle thread-ſhaped, embraced by the filament, and ſcarcely extending beyond its beak; ſtigma ſmall, concave, fringed, projecting a little beyond the point of the beak. *Peric.* Capſule?

Eſſ. Ch. Anther two-lobed. Filament elongated beyond the anther, with an awl-ſhaped, channelled beak, embracing the ſtyle. Outer limb of the corolla ringent; inner a three-lobed lip.

Obſ. Juſſieu had already, after Adanſon, remarked a difference between the infloreſcence of the Ginger and the Cardamom tribes, though both have been comprehended by all botaniſts under *Amomum*. In the former, the flowers compoſe a denſe ſpike, ſupported by a radical ſtalk; in the latter, they are panicled at the baſe of the ſtem. So important a difference in habit, between plants whoſe general ſtructure is ſo uniform and ſimple, might lead us to look for ſome generic difference in the parts of fructification. This Mr. Roſcoe has detected in the *filament*, according to the

the principle which runs through all his generic diſtinctions of this tribe, and which is ſupported throughout by the inflorescence, as well as the parts of the flower in general. Nothing more perfect has ever been accompliſhed in ſyſtematic botany. See SCITAMINEÆ.

1. Z. *officinale*. Narrow-leaved Ginger. Roſcoe n. 1. Ait. n. 1. (Z. majus; Rumph. Amboin. v. 5. 156. t. 66. f. 1. Amomum Zingiber; Linn. Sp. Pl. 1. Willd. Sp. Pl. v. 1. 6. Jacq. Hort. Vind. v. 1. 31. t. 75. "Inſchi; Rheede Hort. Malab. v. 11. 21. t. 12.")—Bracteas ovate, acute. Segments of the outer limb of the corolla linear, revolute. Middle lobe of the lip entire.—Native of the Eaſt Indies; naturalized in Jamaica. A ſtove plant in England, flowering in September. It appears to have been cultivated here by Edward lord Zouch, before the year 1605. The *root* is perennial, tuberous, fleſhy, with long ſtout fibres, well known for its hot, gratefully aromatic, flavour, and cordial qualities. The whole *herb* is ſmooth, and partakes of the flavour of the root. Barren *ſtems* ſeveral, erect, herbaceous, wand-like, leafy, about three feet high. *Leaves* alternate, linear-lanceolate, acute, entire, ſingle-ribbed, ſpreading, with long, cloſe, ſheathing, abrupt *footſtalks*. *Flower-ſtalks* radical, a foot high, clothed with tubular ſheathing *bracteas*. *Spikes* ſolitary, erect, club-ſhaped, enveloped in broader, ſhorter, leſs pointed, crowded *bracteas*, each accompanied by a ſolitary, ſeſſile *flower*, twice its own length, of a delicate texture and ſhort duration. The outer limb of the *corolla* is of a very pale yellow, or ſtraw colour, revolute; the upper ſegment rather the broadeſt. *Lip*, as well as the incurved point of the *filament*, ſpotted with crimſon. We have never been able to procure any ſpecimen or account of the *fruit*, which is perhaps in conſequence of the great increaſe of the *roots*, not often perfected, or if produced, it is moſt probably overlooked by the cultivators, who may find it expedient for the advantage of their crop, to cut away the ſtalks before they run to ſeed.

2. Z. *Zerumbet*. Broad-leaved Ginger. Roſcoe n. 2. Ait. n. 2. Sm. Exot. Bot. v. 2. 105. t. 112. (Z. ſpurium; Koenig in Retz. Obſ. faſc. 3. 60. Z. latifolium ſylveſtre; Herm. Lugd.-Bat. 636. t. 637. Amomum Zerumbet; Linn. Sp. Pl. 1. Willd. Sp. Pl. v. 1. 6. Jacq. Hort. Vind. v. 3. 30. t. 54. Lampujum; Rumph. Amboin. v. 5. 148. t. 64. f. 1. "Katou-inſchi-kua; Rheede Hort. Malab. v. 11. 27. t. 13.")—Bracteas ovate, obtuſe. Segments of the outer limb of the corolla ſtraight. Middle lobe of the lip cloven, ſlightly wavy. Rib and ſheaths of the leaves ſmooth.—Native of the Eaſt Indies. The *roots* are ſaid to be bitter, without the flavour and pungency of the true Ginger; but the young foliage, according to Rumphius, is uſed in Amboyna as a pot-herb. This ſpecies is not uncommon in our ſtoves, being eaſy of culture, and flowering frequently at the end of autumn. Many perſons who grow it think themſelves poſſeſſed of the real Ginger. The habits of the two plants are indeed very ſimilar, but the barren *ſtems* of the preſent ſpecies are rather the talleſt, being four or five feet high, with elliptic-lanceolate *leaves*; ſilky beneath when young. *Flower-ſtalks* eighteen inches or two feet high, thick and firm. *Spike* ovate. *Flowers* pale yellow, without ſcent, each laſting but a few hours. Upper ſegment of the outer limb ovate, erect, concave: two lower ones lanceolate. *Lip* yellow, its large central lobe emarginate.

3. Z. *Caſumunar*. Caſumunar, or Hairy Ginger. "Roxb. in Aſiatic Reſearches, v. 11. 347. t. 7." Sims in Curt. Mag. t. 1426. Ait. Epit. 376. (Caſſummuniar; Dale Pharmac. 275. Caſumunar; Lewis Diſp. ed. 4. 121.)—Bracteas ovate, rather acute. Segments of the outer limb of the corolla ſtraight. Middle lobe of the lip cloven, dilated, criſped, and crenate. Rib and ſheaths of the leaves hairy.—Native of the Eaſt Indies, from whence it was ſent by Dr. Roxburgh to this country, and flowered in Auguſt 1811, in the ſtove of James Vere, eſq. at Kenſington Gore. The roots had long ago been introduced into the Materia Medica as a powerful ſtimulant and tonic, in hyſteric, paralytic, and other nervous diſorders, poſſeſſing a warm bitteriſh flavour, with the ſmell of Ginger; but they have long gone out of uſe. Their ſhape is leſs elongated and compreſſed than that of Ginger, and more annulated, tuberous or knotty. *Herbage* moſt like the laſt ſpecies, but diſtinguiſhed by the hairy ſheath and mid-rib of the *leaves*. *Flower-ſtalks* not above ſix or eight inches high. *Spike* ovate, browniſh. *Corolla* pale yellow, diſtinguiſhed from *Z. Zerumbet* by the greatly dilated, inverſely heart-ſhaped, criſped and crenate, middle lobe of its *lip*; the two ſide lobes being erect and entire, not larger than in *Zerumbet*. The plant is ſaid to be propagated by cuttings of the *root*.

4. Z. *Mioga*. Japaneſe Ginger. Roſcoe n. 3. Ait. n. 3. (Amomum Mioga; Thunb. Jap. 14. Willd. Sp. Pl. v. 1. 7. Banks Ic. Kæmpf. t. 1. Dsjooka, vulgò Mjoga, ſeu Mionga; Kæmpf. Am. Exot. 826.)—Bracteas ovate, acute. Spike nearly ſeſſile. Segments of the outer limb of the corolla erect, acute. Middle lobe of the lip concave, entire.—Found near Nagaſaki, and in other parts of Japan, flowering in September. *Thunberg*. Kæmpfer ſpeaks of this as an eatable kind of Ginger, with a mild flavour. The leafy *ſtems* are from one to two feet, or more, in height, and with the foliage reſemble thoſe of the three foregoing ſpecies. The *flower-ſtalk* is radical, and remarkably ſhort, or ſcarcely any. *Spike* ovate, with numerous, large, white, pointed, ſtriated, concave *bracteas*; the outer ones largeſt, concealing many within. The *flowers* ſmell faintly like Butter-bur, and have a yellow, very concave, undivided *lip*, and a white *limb*. *Filament* greeniſh-white, beaked, embracing the thread-ſhaped *ſtyle*, according to the generic character, as is faithfully deſcribed by Thunberg, who ſpeaks of the fruit as a nearly ovate, obtuſe *capſule*, with three cells and three valves, and numerous minute *ſeeds*, inſerted into the central column.

5. Z. *roſeum*. Roſe-coloured Ginger. Roſcoe n. 4. (Amomum roſeum; Roxb. Coromand. v. 2. 15. t. 126.) — Bracteas lanceolate, coloured. Spike nearly ſeſſile. Segments of the outer limb of the corolla revolute. Middle lobe of the lip flat, entire.—Native of moiſt valleys in Hindooſtan, flowering in the rainy ſeaſon. The Telingas call this plant Bumacatchicay. *Root* creeping, cylindrical, branched, not knotty. No aromatic or other quality is recorded concerning it, or any other part of the plant. Leafy *ſtems* two or three feet high. *Spikes* nearly ſeſſile at the root, ovate, two or three inches long. *Bracteas* looſely imbricated, erect, lanceolate, acute, of a fine roſe colour, as are alſo the *calyx*, and the narrow revolute ſegments of the outer limb of the *corolla*. The *lip* is whitiſh, obovate, entire, not concave, but ſomewhat reflexed. Beak of the *filament* yellow. No account is given of the *ſeed-veſſel*.

6. Z. *purpureum*. Purple Ginger. Roſcoe n. 5. Ait. n. 4.—"Bracteas ovate, coloured. Segments of the outer limb of the corolla erect. Middle lobe of the lip divided."—Native of the Eaſt Indies. Introduced into the Engliſh ſtoves, by the right honourable ſir Joſeph Banks, in 1796, and obſerved by Mr. Roſcoe in the Botanic garden at Liverpool. It flowers in September.

ZINGIBER, in the *Materia Medica*. See GINGER.

ZINGIS, otherwife Jenghiz-khan, or *Genghiz-khan*, in *Biography*, the founder of the Mogul empire, was the fon of Bifukai, or Jefukai, a chief over thirteen hordes of Moguls in the Tartarian range between China and the Cafpian fea, and born about the year 1161 or 1163, his firft name being Temugin. In the year 1205 he was inftalled in the Mogul empire, and declared his purpofe of giving a new code of laws to the nation; the object of which was the prefervation of peace at home, and the conduct of war abroad. The penalty of death was denounced againft murder, adultery, perjury, and the theft of a horfe or ox, which were the chief articles of Tartarian property. The nation was interdicted all fervile labour, the performance of which was affigned to flaves and ftrangers, and was confecrated to the fole profeffion of arms. The weapons which they were appointed to ufe were bows, fcymetars, and iron maces; and the troops were diftributed into divifions of hundreds, thoufands, and tens of thoufands. The foldiers and officers were made individually refponfible for the fafety and conduct of one another; and it was an eftablifhed rule, that peace fhould never be granted without previous conqueft. With regard to religion, Zingis eftablifhed univerfal toleration. As for himfelf, his only article of faith was the exiftence of one God, the creator and governor of all things; but his Mogul and Tartar fubjects were idolaters, Jews, Chriftians, and Mahometans, all of whom were allowed to practife their feveral rites without moleftation, and without any difference of privileges. Having thus fettled the affairs of the proper Mogul empire, he fucceffively, by his own arms, and thofe of his lieutenants, reduced the different tribes of the defert, and rendered himfelf the undifputed monarch of the paftoral nations who pitch their tents from the wall of China to the Volga. For a fketch of his conquefts, we refer to the article of the Mogul *Empire*. Thefe conquefts were attended with many acts of favage cruelty. In his invafion of Kitay, the northern empire of China, he took 90 cities, deftroyed by fire a number of towns and villages, and maffacred many thoufands of people; at the fame time obliging the Kin emperor to purchafe peace at the price of a Chinefe princefs, 500 youths and maidens, 3000 horfes, and a large tribute in gold and filk. At his departure, he inhumanly ordered all the children whom he had taken in four provinces to be butchered. In a fecond expedition he laid fiege to the capital city Yen-king, now called Pekin, which, after a long refiftance and grievous fuffering by famine, was ftormed by the Moguls, with the conflagration of the imperial palace; and after the defolation of China, its five northern provinces fubmitted to the dominion of the Mogul conqueror. In the bloody conflicts between Zingis and Mohammed, fultan of Kharifm or Charafm, all the rich and populous cities and countries of Tranfoxiana, Kharifm, and Khorafan, were taken or laid wafte by the Moguls. Mohammed died a fugitive in a defert ifland of the Cafpian fea; but his fon, Gelaleddin, boldly refifted the invader, and checked his progrefs, till overpowered by numbers on the banks of the Indus, he was under a neceffity of fpurring his horfe into that rapid river, the oppofite fide of which he reached in fafety. Zingis, admiring his heroifm, and forbidding the purfuit of him, faid to his fons, "Any fon might wifh to fpring from fuch a father." Neverthelefs he ordered all the fultan's male children to be killed. After the defeat of Gelaleddin, Zingis, remaining for fome time in Khorafan, purfued his cuftomary operations of facrificing lives, and defolating whole tracts of country. Returning to Bokhara, or Bucharia, in 1223, he inveftigated the antiquities of Balk and the doctrines of Zoroafter, and held conferences with the Mahometan doctors, the refult of which was his affent to their tenets, the neceffity of a pilgrimage to Mecca excepted. In 1224 he held a grand diet in the plain of Tonkat, which, though feven leagues in length, could fcarcely contain the tents of all the diftinguifhed perfons that were affembled. In the following year he paffed through Tartary to the borders of northern China, and fubjugated the kingdom of Hya or Tangut. In the province of Shen-fi, on the mountain of Lu-pan, whither he went in order to pafs the fummer heats, he was taken ill; and as he perceived his end approaching, he fummoned the generals of his army, before whom he declared his fourth fon regent, till the arrival of his brother Octai, whom he appointed his fucceffor in the dignity of grand khan of the Moguls and Tartars. Recommending unanimity, and advifing the conduct of the war againft Kin, he expired in Auguft 1227, at the age of 66 years. His remains were interred with great pomp under a beautiful tree which he had fixed upon in returning from a hunting expedition. He had many wives, and left a numerous progeny. "This emperor," fays one of his biographers, "poffeffed the civil and military qualities neceffary for the founder of a mighty monarchy, together with a penetrating and inquiring mind, which, with fuperior culture, might have placed him in the lift of truly great princes. His memory now furvives as that of one of the great conquerors whofe deeds have aftonifhed the world, to which they have proved the moft terrible of fcourges. His fimple laws were long the rule of the countries he governed, and are ftill religioufly obferved by the Crim Tartars." D'Herbelot. Gibbon's Hift. Univ. Hift. Gen. Biog.

ZINGST, in *Geography*, a fmall ifland in the Baltic, near the coaft of Pomerania, and a little to the weft of the ifland of Ufedom. N. lat. 54° 28′. E. long. 12° 50′.

ZINIAR, a name given by the old chemical writers for verdigrife.

ZINIAT, a word ufed by the old chemical writers to exprefs either the action of fermentation, or any thing that is capable of exciting it in bodies.

ZINK. See Zinc.

ZINKOW, in *Geography*, a town of Poland, in Podolia; 32 miles N. of Kaminiec.

ZINN, John Godfrey, in *Biography*, an anatomift and botanift, was born in 1726, ftudied under Haller at Gottingen, and became botanical profeffor in that univerfity. His firft experiments were undertaken in order to afcertain the fenfibility of different parts of the brain; he then proceeded to the examination of the eye, which produced his efteemed work, intitled "Defcriptio Anatomica Oculi Humani, Iconibus illuftrata," Gotting. 4to. 1755. Botany was alfo the fubject of his affiduous ftudy, the refult of which appeared in feveral papers, and in a catalogue of the plants in the academical garden and vicinity of Gottingen, arranged according to the fyftem of Haller. His premature death happened at the age of 32, in April 1758. He was a member of the Academy of Sciences at Gottingen, the Inftitute of Bologna, and the Royal Society of Berlin. Haller. Eloy.

ZINNA, in *Geography*, a town of the duchy of Magdeburg; 18 miles N. of Wittenberg.

ZINNIA, in *Botany*, was fo named by Linnæus, in honour of Dr. John Godfrey Zinn, profeffor of phyfic and botany at Gottingen, author of a *Catalogus Plantarum Horti Academici et Agri Gottingenfis*, printed there in 1757. This work, making an octavo volume, is claffed after Haller's method. Its author has, befides, publifhed various botanical and phyfiological treatifes, and would probably have contributed much more to the advancement of fcience, had he not been cut off, at the early age of 32, in 1758. Haller, whofe whose disciple and successor he was, speaks of him with much complacency; but it is easy to see that his favour was greatly conciliated by Dr. Zinn's preference of his system to that of Linnæus. One principle of the learned Swede he indeed very justly approved, that plants nearly related on the whole ought not to be separated on account of a difference in one particular part. Yet in the application of this rule he surely has wandered widely from the truth, in wishing to unite *Geum, Comarum, Potentilla, Tormentilla,* and *Fragaria.* Such it seems was the avowed opinion of Zinn, in his *Prælectio,* published in 1755; but he has not followed it in his work above-mentioned. In that volume occurs, if we mistake not, the first figure of a *Zinnia,* under the name of a *Rudbeckia;* though the author justly declares it to constitute an indubitably new genus.—Linn. Gen. 437. Schreb. 563. Willd. Sp. Pl. v. 3. 2139. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 91. Pursh 565. Juss. 188. Lamarck Illustr. t. 685. Gærtn. t. 172.—Class and order, *Syngenesia Polygamia-superflua.* Nat. Ord. *Compositæ oppositifoliæ,* Linn. *Corymbiferæ,* Juss.

Gen. Ch. *Common Calyx* ovato-cylindrical, smooth, imbricated, with numerous, obtuse, erect, permanent scales. *Cor.* compound, radiated. Florets of the elevated disk several, all perfect, funnel-shaped, five-cleft, internally villous; those of the radius from five to ten, ligulate, roundish or oblong, abrupt, larger than the disk, permanent. *Stam.* in the perfect florets, Filaments five, very short; anthers united into a cylindrical tube. *Pist.* in the perfect florets, Germen oblong, with two very unequal awns; style thread-shaped, cloven half way down; stigmas two, erect, obtuse: in the female florets, Germen oblong, triangular, without awns; style capillary, cloven half way down; stigmas two, recurved. *Peric.* none, except the unchanged calyx. *Seeds* in the perfect florets, solitary, oblong, quadrangular, compressed. Down of two points, one of them awned. In the female florets solitary, pointless, crowned with the permanent petal. *Recept.* chaffy, with tongue-shaped, channelled, deciduous scales, the length of the calyx.

Ess. Ch. Receptacle chaffy. Seed-down of two erect unequal awns. Calyx imbricated, somewhat ovate. Florets of the radius from five to ten, permanent, undivided.

1. Z. *pauciflora.* Yellow Zinnia. Linn. Sp. Pl. 1269. Willd. n. 1. Ait. n. 1. (Bidens calyce oblongo squamoso, seminibus radii corollâ non deciduâ coronatis; Mill. Ic. v. 1. 43. t. 64. Rudbeckia foliis oppositis hirsutis ovato-acutis, calyce imbricato cylindrico, radii petalis pistillatis; Zinn. Gott. 409. t. 1. Chrysogonum peruvianum; Linn. Sp. Pl. ed. 1. 920, excluding the synonym, which is wrong, and a heap of confusion; see Feuillé 766.)—Flowers sessile. Leaves somewhat heart-shaped, sessile, clasping the stem.—Native of Peru. Cultivated by Miller, but not commonly preserved in our gardens like the following, being less hardy, and not so ornamental. The *root* is annual. *Stem* erect, three or four feet high, branched, angular, leafy. *Leaves* opposite, deflexed, two or three inches long, acute, roughish, entire, rough-edged, with three principal ribs; their base broadish-heartshaped. *Flowers* solitary at the ends of the branches, nearly or quite sessile, with the uppermost pair of leaves close to the base of the *calyx; disk* brownish; *radius* yellow. We perceive a difference between several specimens and figures of this plant, but cannot trace an absolute or constant specific distinction between them. In the Linnæan specimen, the small number of *florets* justifies the specific name, and the *flower* itself is quite sessile. This is undoubtedly Miller's plant, though the radiant *florets* are much more numerous in his figure, and the whole *flower* larger. A specimen under this same name of *pauciflora,* given us by sir Joseph Banks, from Jacquin's herbarium, is what Zinn's figure exactly represents. The *leaves* are shorter, more rounded and heart-shaped, and the *flower* is large, with more or less of a stalk. Its radiant *florets* are numerous, broad, and yellow. How far these characters are permanent, culture and repeated observations must determine. We are rather inclined to suspect the Linnæan specimen, raised in the Upsal garden, is a starved one, the *flowers* perhaps being rendered diminutive by their lateness. It is most probable that a portion of the same seed was sent by Jussieu to Linnæus and to Miller. The plant indeed flowered at Upsal before the year 1753, when Miller says he received his seeds, because it is described, in the first edition of Sp. Pl. printed that year, from the garden specimen now before us.

2. Z. *multiflora.* Common Red Zinnia. Linn. Sp. Pl. 1269. Willd. n. 2. Ait. n. 2. Pursh n. 1. Curt. Mag. t. 149. Linn. Dec. 23. t. 12. Jacq. Obs. fasc. 2. 19. t. 40.—Flowers stalked. Leaves opposite, ovato-lanceolate.—Native of North America. Found on the banks of the Mississippi, flowering in July and August. Annual. *Rays* yellow, orange, and sometimes brick-red. *Pursh.* The latter colour is most common in the gardens of Europe, where this plant is treated as a rather tender annual, like the different species of *Tagetes,* being best raised on a hot-bed, and planted out so as to flower in the autumn. A yellow variety, almost equally common, is less singular and striking in colour. We are not by any means certain that this variety may not be sometimes taken for the foregoing; yet the plant of Zinn and Jacquin, of which we have just given an account, is too different in the great breadth of its *leaves* to be confounded with the present species. The Z. *multiflora* has a more hairy *stem* than the *pauciflora,* much narrower and elongated *leaves,* with three ribs; their surface roughish to the touch. The *flowers* stand each on a hollow, deeply furrowed, terminal stalk, from one to two inches long, much thicker than the stem, and gradually swelling upwards. The *disk* is conical and acute, composed of reddish or tawny *florets,* accompanied by the prominent, dark-green, or blackish, scales of the *receptacle:* the *radius* consists of ten or more broad, elliptical, usually emarginate *florets,* of a deep brick-red, and very smooth, above; pale, greenish, and rough beneath; reticulated with veins, and finally becoming rigid, or membranous.

3. Z. *verticillata.* Whorl-leaved Zinnia. Andr. Repos. t. 189. Willd. n. 3. Ait. n. 3.—Flowers stalked. Leaves whorled, ovato-lanceolate. Radiant florets very numerous.—Native of Mexico. Raised by Messrs. Lee and Kennedy at Hammersmith, about the year 1789. We cannot suppose this to be any thing more than a luxuriant variety of the last. Annual plants, pampered with manure, and every possible advantage of cultivation, are liable to acquire aggregate *leaves,* double *flowers,* and many other characters, which do not appear in a state of nature. These it is the business of the gardener to encourage, and of the botanist to beware of. Having seen no specimen of this plant, we can only judge by the figure, in which we cannot discover any specific distinctions. The *flowers* indeed are rendered very splendid, by their multiplied *radius* of a deep scarlet, and their *disk* seems broader, and less conical, or pointed, than in either of the foregoing species. This last character, if constant, is more material than any which has been mentioned.

4. Z. *elegans.* Purple-flowered Zinnia. Jacq. Ic. Rar. t. 589. Willd. n. 4. Ait. n. 4. (Z. violacea; Cavan. Ic. v. 1. 57. t. 81. Andr. Repos. t. 55.)—Flowers stalked. Leaves opposite, ovate-heartshaped, sessile, clasping the stem, harsh on both sides. Scales of the receptacle jagged and fringed.

fringed. Tubular florets with a hairy disk.—Native of Mexico; said to have been brought to England from Madrid, in 1796, by the late marchioness of Bute; whose botanical acquisitions in Spain, made with no less intelligence than taste, have eminently enriched the gardens of England. This is also a tender annual, flowering from Midsummer to the end of autumn. The *herbage* is stouter, the *leaves* broader, and much more harsh to the touch, like a file, than in any other of the genus. *Flowers*, in a cultivated state at least, as large as the last, with a conical, but rather obtuse, *disk*; the prominent orange-coloured scales of the *receptacle* have many finely-fringed segments; the upper surface of the yellow tubular *florets* is densely shaggy; the *radius* consists of numerous, spreading, obovate *florets*, of a deep lilac, or light purple, colour, less harsh, or scariose, after flowering than in the *multiflora*.

5. Z. *tenuiflora*. Slender-flowered Zinnia. Jac. Ic. Rar. t. 590. Willd. n. 5. Ait. n. 5. Curt. Mag. t. 555. (Z. revoluta; Cavan. Ic. v. 3. 26. t. 251.)—Flowers stalked. Leaves opposite, ovato-lanceolate, pointed. Calyx cylindrical. Radiant florets linear, revolute.—Native of Mexico. Raised here in 1799, by the late captain Woodford, at Vauxhall. This very distinct species requires the same treatment as the rest. They may all, perhaps, succeed, in favourable seasons, as hardy annuals, but are best raised with artificial heat in the spring. The present has much narrower *leaves* than the last, which moreover are nearly smooth. The *flowers* are the smallest of their genus, and distinguished by their bright red, narrow, revolute *radiant florets*, very rough at the edges; the tubular *florets* are yellow, roughish in their disk.

Zinnia, in *Gardening*, contains plants of the annual flowering kind, in which the species cultivated are, the few-flowered yellow zinnia (Z. pauciflora), and the many-flowered red zinnia (Z. multiflora).

These are both plants of the annual flower kind.

Method of Culture.—These annual plants are increased from seeds, which should be sown on a slight hot-bed in the early spring, as March; and when the plants are a few inches high, they should be pricked out on another bed previously prepared to receive them, where they should remain till the advance of summer, when they may be taken up and planted out in the borders of the pleasure-ground, where they blow and complete their seeds for the year following.

They have a fine effect in their leaves and flowers in these situations.

ZINNORE, in *Geography*, a town of Hindoostan, in Guzerat, on the Nerbuddah; 30 miles N.E. of Baroach.

ZINTEN, a town of Prussia, in the province of Natangen, near which the Poles were defeated in 1520; 30 miles S.S.W. of Königsberg. N. lat. 54° 23'. E. long. 20° 20'.

ZINTI, a town of South America, in the viceroyalty of Buenos Ayres, and archbishopric of La Plata; 90 miles S. of La Plata.

ZINU, a province of South America, in the viceroyalty of New Grenada, situated to the north of Choco, and west of Carthagena.

Zinu, or *Sinu*, a town of South America, and capital of a province, on a river of the same name, which runs into the Spanish Main; 90 miles S. of Carthagena. N. lat. 8° 58'. W. long. 75° 48'.

ZINWALD, a town of Bohemia, in the circle of Leitmeritz; 18 miles N.W. of Leitmeritz.

ZINZENDORF, Nicholas Louis, in *Biography*, was born at Dresden in May 1700, and was educated under the inspection of his grandmother, who was a pious woman, accustomed to the perusal of the Scriptures. He was thus led into an early acquaintance with the principal doctrines of the Christian religion, and manifested a peculiar taste for spiritual songs. Under professor Franke at Halle, he became a good classical scholar; and his facility in composing verses was such, that he indited them faster than he could write them. Such, however, was his proneness to dissipation, and particularly gaming, that he squandered away not only his money, but all his effects. From his youth he was fond of forming religious societies, and it is said that he had established seven associations of this kind between the year 1710 and the year 1716, when he left Halle. One of his companions in forming these institutions was baron Frederick von Watteville, in intercourse with whom he first conceived the idea of attempting the conversion of the heathens. With this view they bound themselves by an oath, and determined to employ others in accomplishing this design who were properly qualified for the office. This resolution seems to have taken its rise from a baptized native of Malabar, who had been brought to Halle by the missionary Ziegenbalg. In 1716 Zinzendorf removed to Wittenberg, where he applied diligently to his studies; and in 1719 he quitted Wittenberg, in order to gratify his relations by pursuing his travels. On his tour he remained for some time at Utrecht, prosecuting his studies in history and jurisprudence; but his chief attention was directed to theology, as he had formed a purpose of becoming a preacher. From Holland he proceeded to Paris, where he associated with his friend, Henry, prince of Reuss, and endeavoured to spread his doctrine among the Catholic nobility, by some of whom they were treated with respect, while others contemptuously denominated them Jansenists and Pietists. At this time he was introduced by Father de la Tour, general of the Society of the Oratory, to the archbishop of Paris, and attempts were made, without effect, for gaining him over to the Catholic church. During his abode at Paris he formed an acquaintance with several other persons of distinction. From Paris he proceeded through Switzerland to Germany in 1720, and having arrived at Hernsdorf, in Lusatia, he found his grandmother still living, and employed himself in communicating instruction to the domestics, and corresponding with his friends. Soon after, retaining his purpose of becoming a preacher, he went to Dresden, and having received his property from those with whom it had been entrusted, he purchased the lordship of Bertholdsdorf, in Lusatia, and marrying a sister of the prince of Reuss, distinguished for her piety and virtue, he assigned to her his whole property, that he might not be incumbered and diverted from the prosecution of his design by the cares of the world. About the year 1722 he indulged the notion of a purer church discipline, of which he observed some traces among the Bohemian and Moravian brethren, who, from their earliest connection with the Waldenses and true followers of John Huss, had formed a peculiar religious community. The Christians of this description had undergone from the year 1458 to 1627 severe persecutions, so that they were almost extirpated from Germany; but a small number of them remained, under oppression, in Moravia; and about the year 1720 the sect revived: so that they held frequent meetings, read the Scriptures with their old books of hymns, celebrated in secret the holy sacrament, and introduced, at least in their houses, the ancient church discipline. One of their number, of obscure condition, obtained an introduction to count Zinzendorf, who gave them leave to settle on his estate at Bertholdsdorf. Availing themselves of this permission, a small number of them, consisting of three men, two women,

women, and five children, came hither from Moravia, in Whitfuntide, 1722, and erected on a hill, in a wild marfhy diftrict, a wooden habitation, expofing themfelves to the derifion of the adjacent inhabitants. They were fo poor that the countefs fent them a cow to fupply milk for their children. However, they gradually gained new converts; and when the count and his confort vifited this new fettlement of the Moravian brethren in the month of December, he gave them a cordial welcome, and falling upon his knees, pronounced a benediction on the infant colony. Such was the origin of the village of Hernhut. (See HERNHUTERS and MORAVIANS.) The count, whilft he afforded them protection, left them at full liberty to think for themfelves; more efpecially as he found, upon examination, nothing improper in their doctrine. From this time, count Zinzendorf, in connection with fome other perfons fimilarly difpofed, took pains in giving inftruction to his fubjects, and educating their children; avowing himfelf a true Lutheran, but wifhing that his people might remain totally ignorant of the difputes that fubfifted among Proteftant divines. In 1723 he publifhed a fmall catechifm, entitled "The pure Milk of the Doctrine of Jefus," which, he fays, coft him more labour than all his other works. The count, devoted to the profecution of the work he had undertaken, refided fometimes on his eftate in Lufatia, and fometimes at Drefden, but declined every offer of a place at court. He employed himfelf in the compofition and occafional publication of books adapted to his defign; one of which, being a periodical work, and entitled "The German Socrates," was fuppreffed by order of the council, probably becaufe it cenfured the prevailing indifference about religion, and called upon his fellow-citizens to live in a manner more agreeable to what their religion required, or entirely to renounce it. In 1727 he quitted Drefden, that he might be nearer his favourite object Hernhut, and that he might be at leifure to devote his whole time and attention to the improvement and increafe of his congregation. With this view he made a tour through the greater part of Germany, occafionally preaching, and endeavouring to gain converts. In 1731 he extended his tour to Denmark, and being prefent at the coronation of Chriftian VI., who conferred upon him the order of Dannebrog, which five years afterwards he refigned, becaufe he thought it improper to appear as the inftructor of his flock with the infignia of his order. In this tour he acquainted himfelf with the ftate of the Danifh miffions in the Eaft Indies and Greenland; and on his return he took meafures for carrying into execution the defign he had formed at Halle with his friend Watteville. From this commencement, in the year 1732, arofe that miffionary fyftem of the Moravians which has fince been fo widely and fo wonderfully extended. Between 1732 and 1766 nearly 4000 negroes in the Danifh iflands were baptized; and in 1768 the congregation of New Hernhut and Lichtenfels, in Greenland, amounted to 784 perfons. When the congregation at Hernhut had increafed in 1732 to 500 perfons, the Saxon court became alarmed, and appointed a commiffion for the purpofe of examining their doctrine and principles. Although they were found to be inoffenfive, the count was forbidden to bring any more new emigrants from Moravia; and foon after he received an order to fell his eftate and property, which was a kind of fentence of banifhment from his country. He alfo perceived a coldnefs and referve in the difpofition of his friends. Accordingly he quitted Hernhut, and repaired to his friend count Reufs at Eberfdorf. He now thought ferioufly, as he had done twenty years before, of entering regularly into the church; but the countefs and his friends diffuaded him from adopting this meafure. With a view of becoming tutor to the children of Richter, a merchant at Stralfund, to which he was urged by his pecuniary circumftances, he was examined for orders, and having obtained a flattering teftimonial, was formally ordained at Tubingen. But a change taking place in the circumftances of Richter, this plan did not fucceed. In 1735 he made an attempt to vifit Sweden, but was forbidden to enter the kingdom by an order of government; and this occafioned the compofition of one of his moft important works, entitled "A Letter to the King of Sweden in regard to the general Belief of himfelf and Congregation," which he widely circulated, and which produced various plans for extirpating the Moravian brethren from the empire. In the fame year he vifited Switzerland, and in 1736 he and the countefs made a tour to Holland, where, at the defire of the princefs dowager of Orange, he founded a new colony at Yffelftein, called Heerendyk, which was afterwards removed to Zuyft. On his return he found at Caffel a copy of a Saxon refcript, by which he was forbidden the territories of that electorate, and banifhed from his native country. He was thus reduced to the neceffity of making various excurfions; and on his return he was invited to a conference with the king of Pruffia, who was fo well fatisfied with his doctrine and character, that he advifed him to be regularly ordained. For this purpofe he recommended him to the chief court preacher Jablonfky, by whom he was confecrated bifhop of the Moravian congregation in May 1737. In this year he vifited London, and eftablifhed the brotherhood in England. Here he became acquainted with John Wefley, and maintained a difpute with him on the impoffibility of men's attaining moral perfection, for which the Englifh preacher contended. Although he obtained permiffion to return to Hernhut, it was on condition of his making certain declarations with which he could not comply, and therefore he became a voluntary exile; and was forbidden ever to enter Saxony. In the year 1738 he undertook his firft voyage to America, in the courfe of which he compofed a work entitled "Jeremiah a Preacher of Righteoufnefs." Upon his arrival at the ifland of St. Thomas, he found that all the miffionaries had been thrown into prifon, but he immediately procured their releafe, and liberty for his congregation to affemble. After his return he vifited Holland and Switzerland, wrote in his own defence againft the accufations of his German enemies, and held public affemblies at Geneva. In 1742 he made a fecond voyage to America, and preached alternately with their own minifter to the Lutheran congregation at Germantown, in Pennfylvania, and built for them a place of worfhip. In a Latin fpeech at Philadelphia he laid afide the title of count, and affumed the name of Von Thumfteen, which belonged to his family. The Quakers generally ftyled him friend Lewis. He alfo eftablifhed the celebrated colony at Bethlehem, and made a tour among the Indians, who received him favourably, and, as a token of their friendfhip, gave him the wampum belt. In America, however, he fuffered much abufe and calumny. In 1743 he returned to Europe; and having proceeded to Riga with a view of fettling fome differences among his followers at Livonia, he was arrefted, conveyed to the frontiers, and ordered never to enter the imperial territories any more. In 1747 he obtained permiffion to return to Saxony, after an exile of ten years; and the king, having received from one of the Moravians a confiderable fum of money for the caftle of Barby and diftrict of Doben, iffued a declaration that the fociety fhould be allowed, in every part of his territories, the fame privileges which they had enjoyed at Hernhut. In 1748 he he succeeded in obtaining a commission, which, after particular examination, declared the members of the Moravian community to be true adherents to the Augsburg confession. In the following year he visited England, and obtained an act of parliament for the protection of his followers in the British dominions in America. In 1757 he made his last tour to Switzerland, and from thence proceeded to Holland. In 1760 he died at Hernhut, after an illness of four days, and his funeral was attended by 2000 of his followers, and as many spectators; and his coffin was carried to the grave by thirty-two preachers and missionaries, some of whom had come from Holland, England, Ireland, North America, and even Greenland. Count Zinzendorf was somewhat above the middle size; and his countenance combined seriousness with animation. In early life his manners were elegant, but as he withdrew from intercourse with the world, in more advanced life they became stiff and reserved. To money he was perfectly indifferent, and as he gave to every mendicant, he was often pennyless. His disposition was lively, but he was capable of long-continued and intense application. His memory was prompt and comprehensive, but as he was of a lively imagination it was not very retentive. In his style he bid defiance to all the rules of grammar, and his ambiguous mode of expression subjected him to many inconveniences, so that his meaning was often mistaken and misrepresented. To persons of the lower order he was condescending, and in his intercourse with all mild and candid. In his temper he was irritable and passionate, but placable and forgiving. His activity in doing good and serving others was indefatigable and unbounded; he often promised, it is said, with the best intentions, beyond his ability of performance; and he is charged with having used art and flattery to carry on his own purposes, and to gain converts to his cause. Mosheim, &c. Gen. Biog.

For a further account of the tenets and partisans of the sect with which he was connected, and of which he was, according to his own statement, a reformer, and not a founder, we refer to the articles Hernhuters, Moravians, and Unitas *Fratrum*.

ZINZIBER, Ginger. See Zingiber and Ginger.

Zinziber *Rubrum*, *Red Ginger*, a name by which some authors have called the officinal casumunar-root.

Zinziber *Caninum*, *Dog's Ginger*, in *Botany*, a name given by some of the old writers to the *persicaria urens*, or biting arsmart; a plant which is very hot, and pungent to the taste, and grows in watery places. It had hence the name of *hydropiper*, water-pepper, among the Greeks, and was called *zinziber caninum*, or dog's ginger, by Avicenna and others, from its heat, and from an opinion that it would poison dogs that eat of it.

The Arabian name is *zinzibil alkeleb*.

Zinziber *Caninum* is also a name given by some authors to the *capsicum*, or Guinea-pepper. Ger. Emac. Ind. 2.

ZINZIG, or Sinzig, in *Geography*, a town of France, in the department of the Roer; 18 miles N.N.W. of Coblentz. N. lat. 50° 33'. E. long. 7° 12'.

ZINZILLA, a name by which some medical writers have called that species of the herpes, which we usually call the shingles.

ZINZOACZA, in *Geography*, a town of Mexico, in the province of Mechoacan, anciently the residence of a cacique.

ZIOBERIS, in *Ancient Geography*, a river of Asia, in Hyrcania, which discharged itself into the Rhydage, according to Quintus Curtius. Diodorus Siculus calls it Stiboetes.

ZIOLO, in *Geography*, a town of Italy, in the Paduan; 10 miles S.E. of Padua.

ZION, in *Ancient Geography*. See Sion and Jerusalem.

ZIPH, a town of Palestine, in the tribe of Judah. (Josh. xv. 24.) St. Jerom says, that in his time they shewed the village of Ziph, 8 miles from Hebron eastward. David for some time concealed himself in the wilderness of Ziph. (1 Sam. xxiii. 14, 15.) There was another city called Ziph, near Maon and Carmel of Judah. Josh. xv. 55.

ZIPHRON, or Zephronia, a city N. of the land of promise, now unknown. Numb. xxxiv. 9.

ZIPOETIUM, a town of Asia Minor, in Bithynia, near mount Lyperus, and which had been founded by king Zipoteus. Steph. Byz.

ZIPPORIS, a name which the ancients gave to the town of Sefora or Sauffori. It was the strongest place in Galilee, and its position might be regarded as the key of the province, according to Josephus.

ZIPSERCHLOSS, in *Geography*, a town of Hungary; 6 miles E. of Leutsch.

ZIRBALIS Hernia, a term used by medical writers to express that kind of rupture which is caused by a descent of the omentum into the scrotum.

ZIRBUS, the name by which the Arabian physicians have called the omentum.

ZIRCON, in *Mineralogy*, *Jargon de Ceylon*, Romê de Lisle, *Zircon*, Haüy, a gem originally found in the island of Ceylon, in the sands of rivers, along with spinel, sapphire, temmaline, and iron-sand. Zircon, the gem called the hyacinth, and zirconite, are regarded by most mineralogists as varieties of the same species. They are essentially composed of the earth called zircon, (see Zirconia, in *Chemistry*,) with silex, and a minute portion of iron, which may be regarded merely as the colouring matter. The primitive form of the crystals of zircon, according to Haüy, is an octahedron, composed of two four-sided prisms, whose sides are isosceles triangles. The inclination of the planes of the same pyramid to each is 124°.12; the inclination of the sides of one pyramid to those of the other 82°.50. The angle of the summit is 73°.44. The common forms in which it occurs are rectangular four-sided prisms, rather flatly terminated by four-sided pyramids, the planes of which are set on the lateral planes of the prism under equal angles. The above figure is often truncated in the lateral edges. The angles of the prism, in junction with the pyramid, are often bevelled, and sometimes the prisms are terminated by four planes at each end, two of which at each end form very obtuse angles, and are set on the lateral planes of the prism. The crystals are generally small, and occur loose or imbedded. The surface of the crystals is sometimes rough, and sometimes smooth and shining; that of the grains is uneven, and glistening internally. Zircon is splendent or shining, with a lustre intermediate, between adamantine and resinous. The structure is imperfectly foliated, with the folia parallel to the lateral edges of the prism. The fracture is flatly conchoidal. The prevailing colour of zircon is grey; it is sometimes white, green, and brown, and occasionally yellow, blue, and red. The colours are pale; it is sometimes transparent, but more frequently semi-transparent or translucent: it refracts doubly. Zircon is harder than quartz, but softer than the diamond. The specific gravity varies from 4.5 to 4.7. It is infusible without addition by the blow-pipe.

According to Klaproth, the conftituent parts are,

Zircon - -	69	63
Silex - -	26.50	33
Oxyd of iron -	50	1
	96.	97

Hyacinth: Zircon Hyacinth, Brongniart. — The prevailing colour of this mineral is orange-red; it is fometimes yellow, grey, and green, and very rarely white. It occurs in angular grains, but more frequently in fmall cryftals, which have the following forms. A rectangular four-fided prifm, terminated by four rhomboidal faces at each end, fet on the lateral edges of the prifm; the prifm is fometimes truncated on the edges. Sometimes it occurs in an irregular garnet-fhaped dodecahedron, and fometimes in a flat octahedron. The ftructure is foliated; it has a double rectangular cleavage, and the folia are parallel with the diagonal of the prifm. Hyacinth is tranfparent or tranflucent, and refracts doubly: the luftre is refino-vitreous and fplendent. It is very hard, fcratching quartz with eafe. The fpecific gravity varies from 4.3 to 4.7. Before the blow-pipe it lofes its colour, but not its tranfparency, and is infufible. According to Klaproth, the conftituent parts of hyacinth of Ceylon are,

Zircon - - -	70
Silex - - -	25
Oxyd of iron - -	0.50
Lofs - - -	4.50
	100.

According to Vauquelin, the conftituent parts of hyacinth of Expailly are,

Zircon - - - - -	64
Silex - - - - -	32
Oxyd of iron - - - -	2
Lofs - - - - -	1
	99

Zirconite does not appear to differ from zircon, except in the fituation in which it is found. It occurs in fmall cryftals of a reddifh-brown colour, imbedded in fienite. According to Klaproth, its conftituent parts are,

Zircon - - - -	65
Silex - - - - -	33
Oxyd of iron - - - -	1
	99

Zircon and hyacinth, as we have ftated, were originally found in Ceylon; they have fince been found in various parts of Afia and Europe.

Zircon occurs in confiderable quantities along with fapphire and iron-fand in volcanic fand, in a rivulet near Expailly in Auvergne; alfo near Pifa, and in the volcanic fand of the Vicentine. It has been found in trap-rocks in Bohemia, and in the vicinity of Lifbon. It was firft found in its native fituation at Freidrickfchwarn, in the diftrict of Chriftiana, in Norway, imbedded in fienite. It was alfo found in bafalt near Expailly, and in the mountain of Anife in Auvergne, and alfo in volcanic fcoria in the fame country. It has been found in rolled maffes of fienite by profeffor Jamefon in Scotland, in the county of Galloway; and has fince been met with in granite near Cuffel, in Dumfriesfhire.

Zircon has been found in South America, and in the province of New Jerfey, in the United States.

Zircon and hyacinth are characterized by their great fpecific gravity. Common zircon has been frequently confounded with the diamond, but the fpecific gravity alone would be fufficient to diftinguifh them; that of the diamond not exceeding 3.5. The hyacinth has often been confounded with other minerals. The oriental hyacinth of Romé de Lifle is orange-coloured fapphire. The occidental hyacinth of Dutens is yellow-coloured topaz.

Cruciform hyacinth is crofs-ftone; brown volcanic hyacinth is vefuvian; white hyacinth of Somma is meionite.

The hyacinth of Deffentis, mentioned by Sauffure, is a variety of garnet.

Common zircon is frequently cut and polifhed by the jewellers as a gem. The greyifh-white and yellowifh-white varieties are the moft prized, on account of their refemblance to the diamond. The darker coloured varieties may be deprived of their colour by heat. It is cut into the fame forms as the diamond, and exhibits faintly the fame play of colours, and is not unfrequently fold as an inferior kind of diamond. The hyacinth is alfo employed by jewellers in various kinds of ornaments; but pale garnets and rock cryftals are frequently fold for hyacinths.

ZIRCONIA, or ZIRCON, in *Chemiftry*, the name of a peculiar earth, hitherto only met with in the minerals termed *hyacinth*, and *zircon* or *jargon*. See the preceding article.

Zirconia exifts in the form of a fine white powder, which feels rather harfh when rubbed between the fingers. It has neither tafte nor fmell. It is infufible before the blow-pipe; but when heated violently in a charcoal crucible it undergoes a fort of imperfect fufion, and acquires a greyifh colour and porcelanious appearance. In this ftate it is very hard, and its fpecific gravity is 4.3.

Zirconia is infoluble in water, but has a confiderable affinity for that liquid. It does not combine with oxygen, azote, or any of the fimple combuftibles, but appears to have a ftrong affinity for many metallic oxyds, efpecially for that of iron.

It is infoluble in alkaline folutions, neither can it be fufed with them by the affiftance of heat; but it is foluble in the alkaline carbonates. Sir H. Davy fubjected this earth to the action of galvanifm, and obtained evidences of its containing a metal as its bafis. To this metal he gave the name of *zirconium*. Nothing fatisfactory is known refpecting its nature.

No very accurate analyfis of the falts of this earth have been yet made. From fome experiments of Klaproth and Vauquelin, Dr. Thomfon fixes the weight of its atom at 46.25, though it is probable that this is not to be abfolutely relied upon.

Salts of Zirconia: Nitrate of Zirconia.—This falt may be formed by pouring nitric acid on newly precipitated zirconia. It always contains an excefs of acid, and does not cryftallize. It is decompofed by heat, and moft of the vegetable acids, except perhaps the acetic.

Carbonate of Zirconia is a white infoluble powder. It may be formed by double decompofition with the alkaline carbonates, and folutions of zirconia in acids.

Sulphate of Zirconia.—This falt exifts in the form of a white powder, but may be obtained in fmall needle-formed cryftals. It has no tafte, and is infoluble in water. It is eafily decompofed by heat.

Acetate of Zirconia.—This salt has an aftringent tafte. It does not cryftallize. It is very foluble in water and alcohol.

The other falts of zirconia are moftly white infoluble powders, very little known, and apparently poffeffing very little intereft. With refpect to the general properties of zirconia and its compounds, it may be remarked, that the alkalies and alkaline earth feparate this earth from its combinations with acids. The falts of zirconia have an aftringent, harfh, difagreeable tafte, fimilar to fome of the metallic falts. They are moft of them infoluble in water. Thofe which are foluble yield white precipitates when fulphuric acid, carbonate of ammonia, oxalate of ammonia, tartrate of potafh, and infufion of nut-galls, are dropped into their folutions. Thefe properties fufficiently diftinguifh this earth from *alumina* and *yttria*. For further particulars refpecting this earth, fee the articles above referred to.

ZIRCONITE. See Zircon.

ZIRCONIUM, the metallic bafis of zirconia. See Zirconia *fupra*.

ZIRIANKA, in *Geography*, a fmall river of Ruffia, which runs into the Enifei, near its mouth.—Alfo, a town of Ruffia, on the Niznei Tungufka. N. lat. 16° 16′. E. long. 106° 54′.

ZIRICZEE, a town of Holland, one of the moft ancient in Zealand, and capital of Schouwen, built and furrounded with walls in the year 859, by a perfon named Ziringus, from whom it is called. It was the ancient refidence of the comtes of Zealand, and was at that time a place of much more confequence than it is at prefent, the port being filled with fand. The inhabitants carry on a confiderable trade in grain, falt, and fifh: the town is large and populous, and has feveral good buildings; the church, called the "Munfter," dedicated to St. Levinus, is a handfome ftructure. N. lat. 51° 40′. E. long. 30° 48′.

ZIRKNA, a river of Syria, which runs into the Mediterranean, 8 miles S. of Tortura.

ZIRKNITZ. See Cirknitz.

ZIRKWITZ, a town of Silefia, in the province of Oels; 14 miles N. of Breflaw.

ZIRL, or Cirl, a town of the county of Tyrol, on the Inn; 7 miles W. of Innfpruck.

ZIRNOE, a town of Ruffia, in the government of Saratov; 32 miles S.W. of Saratov.

ZIRO, Lo, a town of Naples, in Calabria Citra; 9 miles E. of Umbriatico.

ZIROVAIA, a fmall river of Ruffia, which runs into the Penzinfkaia gulf, 32 miles S.W. of Oklanfk.

ZIRUA, a fmall ifland in the Mediterranean, near the coaft of Tunis. N. lat. 33° 39′. E. long. 11° 39′.

ZIRWITZ, a town of Silefia, in the principality of Oels; 3 miles E. of Trebnitz.

ZIRZING, a town of Auftria; 6 miles E. of Steyregg.

ZIS, a river of Africa, which rifes in the Atlas, paffes by Sugulmeffa, and lofes itfelf in the fands, in the country of Tafilet.—Alfo, a mountain of Africa, between Sugulmeffa and Fez; 40 miles S.S.E. of Fez.

ZISEL, in *Zoology*, a name given by Buffon to the earlefs marmott, or *mus citellus* of Linnæus. See Citellus.

ZISKA, John, in *Biography*, a diftinguifhed leader among the Huffites, was the fon of a Bohemian gentleman, named "De Trocznou," and celebrated for military valour in his youth. Zifka, denoting "one-eyed," was an appellation, which he bore in confequence of having loft an eye in a combat, on occafion of the perfidious execution of John Hufs and Jerome of Prague, at the council of Conftance. Their followers took up arms, and invited Zifka to be their commander. In 1519 he accepted the invitation; and having affembled a body of peafants, he foon difciplined them fo as to be equal to veteran troops. From a fortrefs which he conftructed on an elevated fituation, and called Thabor, the Huffites derived the name of Thaborites. At the fiege of Rabi he loft his other eye; but though totally blind, he executed his office as commander with great vigour and fuccefs. At Auffig on the Elbe he gained a complete victory over the Catholics, and left 9000 of them on the field, retaliating the feverities which they inflicted on the Reformers, by demolifhing their churches, committing their priefts to the flames, maffacring thofe who were prifoners, and laying wafte their country, and thus rendering his name formidable. Having made himfelf mafter of the new town of Prague, it was invefted by the emperor Sigifmund and other princes: but Sigifmund, being defeated with great flaughter by the Thaborites, was obliged to retreat into Moravia, while Zifka laid fiege to Wifrhade. When the emperor with a frefh acceffion of forces renewed the attack, he loft his whole army, and the town furrendered to Zifka. He alfo difperfed an army of crufaders commanded by an archbifhop; and in 1422 he again routed the army of Sigifmund. In the mean time the Huffites renounced their allegiance to Sigifmund, and chofe for themfelves a king; but this meafure was difapproved by Zifka and the Thaborites, becaufe they were inclined to a republican government; and the new king was compelled to abdicate his crown. Such were the reputation and importance which Zifka acquired, that Sigifmund propofed to him terms of accommodation; but in his journey to hold a conference with the emperor, he was feized with the plague, which terminated his life in 1524. Although the ftory of his having ordered his flefh to be given to the birds and beafts, and his fkin to cover a drum, for the purpofe of founding difmay to his enemies and courage to his friends, be fabulous, it is certain that the Bohemians regarded his memory with fuperftitious veneration. Un. Hift. Gilpin. Gen. Biog.

ZISPATA, in *Geography*, a bay of the Spanifh Main, on the coaft of South America; 80 miles S. of Carthagena.

ZISTERSDORF, a town of Auftria, with a citadel. In the year 1704, this town was miferably laid wafte by the Hungarian rebels; 20 miles N.E. of Vienna. N. lat. 48° 28′. E. long. 16° 43′.

ZITARA, a town of South America, in New Grenada, and capital of a diftrict, to which it gives name, in the province of Chocos; 120 miles S.W. of Santa Fé de Antiquia. N. lat. 6°. W. long. 76° 30′.

ZITHA, or Sitha, in *Ancient Geography*, a town of Afia, in Mefopotamia, on the bank of the Euphrates. Ptolemy.

ZITTAU, in *Geography*, a river of Germany, which runs into the Saal, 4 miles S.S.E. of Bernburg.—Alfo, a town of Lufatia, on the river Neiffe. This town is confidered as one of the beft in Lufatia, and fortified in the ancient manner; it contains two churches within the walls, and three without, with three hofpitals and an orphan-houfe; 17 miles S. of Gorlitz. N. lat. 50° 49′. E. long. 14° 56′.

ZITWA, a river of Lithuania, which runs into the Niemen, 20 miles S.E. of Lida, in the palatinate of Wilna.

ZIVAGEE, or Archachera, a town of Hindooftan, in Concan, on the Pirate coaft; 30 miles S. of Severndroog.

ZIUF, a town of Africa, in the kingdom of Tunis.

ZIVOLO, in *Ornithology*, a name by which fome authors have

have called the smaller species of yellow-hammer, from its constant note, which is only *zi, zi.*

It is of the size of the common sparrow; its beak is thick and short; its breast and belly yellowish, spotted with brown; and its head, back, wings, and tail, of a dusky-brown, but two of the tail-feathers on each side have a variegation of white.

The difference between the male and female in this species is, that the male is yellow, and has some yellow spots on its neck and sides, which are wanting in the female. It is almost always seen on the ground, and feeds on seeds, &c. It seems but little if at all essentially to differ from the common yellow-hammer; and Mr. Ray has some suspicion that they are the same species.

ZIWICA, in *Geography*, a town of Austrian Poland; 35 miles S.W. of Cracow.

ZIZA, in *Ancient Geography*, a town in the interior of Arabia Petræa. Ptol.

ZIZANIA, in *Botany*, an ancient name, ζιζανιον of the Greeks, synonymous with the *infelix lolium* of the Latins, as well as with our Darnel, and belonging to an unprofitable weed, of the tribe of Grasses, which greatly injured the crop of corn, and into which Corn itself was supposed to degenerate. (See Lolium.) Our translators of the New Testament call it Tares! Αιρα was another Greek name for Darnel, and is still used for *Lolium temulentum* in the Morea. *Zizania* was merely adopted, as an unoccupied classical name, by Gronovius and Linnæus, for the present genus, which yields an inferior sort of grain, used by the inhabitants of some parts of North America. We cannot applaud this application of ancient names, to plants to which they could not possibly have originally belonged, though Linnæus often practised it. Gærtner has successfully opposed this principle, but did not always change things for the better.—Linn. Gen. 491. Schreb. 639. Willd. Sp. Pl. v. 4. 394. Mart. Mill. Dict. v. 4. Pursh 60. Ait. Hort. Kew. v. 5. 278. Juss. 33. Poiret in Lamarck Dict. v. 8. 863. Lamarck Illustr. t. 768. Gærtn. t. 82. (Elymus; Mitchell in Ephem. Nat. Cur. v. 8. append. 210.)—Class and order, *Monoecia Hexandria*. Nat. Ord. *Gramina*, Linn. Juss.

Gen. Ch. Male, *Cal.* none. *Cor.* Glume of two lanceolate, membranous, ribbed, clasping valves, one rather larger than the other, and most pointed. Nectary of two ovate obtuse scales. *Stam.* Filaments six, capillary, very short, equal; anthers pendulous, linear, notched at each end, shorter than the corolla.

Female in the same panicle, larger, *Cal.* none. *Cor.* Glume of two valves, closed, except a vacancy at each side just above the base; the outer valve largest, concave, long, straight, rigid, revolute at the edges, embracing the inner at each side, and terminating in a long straight awn; the inner narrower, lanceolate, involute at the edges. Nectary of two acute scales. *Stam.* sometimes present, though minute and imperfect, with small incomplete anthers. *Pist.* Germen superior, oblong; styles two, spreading, capillary, short; stigmas feathery, projecting between the valves of the corolla. *Seed* solitary, oblong, even, polished, naked, unconnected with the glumes.

Eff. Ch. Male, Calyx none. Corolla of two valves; the outer one pointed.

Female, Calyx none. Corolla of two unequal closed valves; the outermost largest, revolute at the edges, with a terminal awn. Styles two, divaricated. Seed solitary, enclosed in the plaited corolla, but unconnected with it.

1. Z. *aquatica*. Canadian Wild-Rice. Linn. Sp. Pl. 1408, excluding the synonym of Sloane. Ait. n. 1. Pursh n. 1. Lambert Tr. of Linn. Soc. v. 7. 264. t. 13. (Z. clavulosa; Michaux Boreal.-Amer. v. 1. 75. Willd. n. 3. Z. palustris; Linn. Mant. 295. Willd. n. 4. Schreb. Gram. v. 2. 54. t. 29.)—Panicle pyramidal, compound, with numerous male flowers, in the lower part; spiked and female above.—Common in all the waters, from Canada to Florida, flowering in July and August, and known by the name of *Tuscarora*, or Wild Rice. *Pursh.* Sir Joseph Banks introduced it into this country in 1790, and still cultivates it abundantly in the ponds of his delightful villa of Spring Grove. The seeds were obtained from Canada in jars of water. Mr. Lambert is of opinion, that this grain might be cultivated in many shallow lakes of Ireland, and turn to considerable advantage. The *root* is certainly annual; not, as Mr. Pursh marks it, perennial; and consists of numerous, long, stout, hairy fibres. *Stems* several, two or three feet high, round, jointed, hollow, leafy. *Leaves* grassy, long, narrow, smooth, with long, close, striated, smooth sheaths. *Stipula* short, somewhat pointed, membranous, decurrent, entire. *Panicle* two feet, or more, in length, erect, and terminating in a compound, close, straight, spiked *cluster*, of numerous *female flowers*; the lower part consisting of still more numerous, drooping *male ones*, of a smaller size, with green or purplish *glumes*, and yellow *anthers*, composing an elegant spreading assemblage, of compound *branches*. We have from Mr. Fraser a mutilated specimen, of what Michaux and Willdenow call *clavulosa*, a name well expressing the appearance of the female flower-stalks, after the *flowers* are gone; being larger than in the common specimens. Other writers consider this is not even a variety of the plant in question, and we submit to their opinion. Linnæus, who cultivated the *Z. aquatica* at Upsal, confounded with it originally a Jamaica species, which he afterwards distinguished. But he by inadvertence, in his *Mantissa* above quoted, applies the name of *palustris* to his original *aquatica*, and cites Browne's Jamaica, who has two *Zizaniæ*, neither of which appears to be this North American grass. We shall attempt to set this matter right under the next species.

2. Z. *effusa*. Jamaica Wild-Rice. (Z. aquatica; Linn. Syst. Veg. ed. 13. 714. ed. 14. 855. Willd. n. 1. Z. n. 1; Browne Jam. 340. Arundo alta gracilis, foliis e viridi cæruleis, locustis minoribus; Sloane Jam. v. 1. 110. t. 67.)—Panicle loose, much branched. Male and female flowers interspersed.—Common in all the waters, or lagoons, of Jamaica. Sloane calls it the Trumpet reed. The *stems* are as thick as the little finger, and appear to be several feet high. *Leaves* longer and broader than in the foregoing, with a strong mid-rib. *Panicle* large, with numerous, whorled, repeatedly compound branches, whose ultimate divisions are quite capillary, and very smooth. We have seen but a few damaged *flowers*. This is unquestionably a very distinct species from the last, though it does not appear that Linnæus ever described it as such. He did not, in fact, distinguish between the names of *aquatica* and *palustris*, but used one at one time, and another at a different period, for the same plant, to which he misapplied Browne's synonym. This has caused great confusion, to remedy which we are obliged to choose a new name, which has some meaning attached to it.

3. Z. *miliacea*. Millet-seeded Wild-Rice. Michaux Boreal.-Amer. v. 1. 74. Willd. n. 2. Pursh n. 2, excluding the references to Willdenow and Sloane.—"Panicle loose, much branched. Male and female flowers interspersed. Glumes with short awns. Seed ovate, smooth."—In meadows and ditches overflowed by the tide, in Pennsylvania and Carolina, perennial, flowering in August. *Pursh.* The *stem* is

is described as rather thick. *Panicle* long and large, much branched. Permanent *corolla* tumid, and, as well as the *seed*, somewhat ovate, with very short awns. We have seen no specimen of this species, but the ovate tumid *glumes*, with the similar form of the *seed*, which gave occasion to the specific name, appear to constitute a very clear distinction between this and both the preceding, nor is the figure of Sloane, which we have referred to our *effusa*, by any means reconcileable to the present plant.

4. Z. *fluitans*. Floating Wild-Rice. Michaux Boreal.-Amer. v. 1. 75. Willd. n. 5. Pursh n. 3.—"Spikes solitary, axillary, about four-flowered; the upper ones male. Glumes beardless."—On the banks of lakes Champlain and St. Laurence; perennial, flowering in July. Of humble stature, with slender, branched, floating *stems*. *Leaves* floating, linear, flat. *Spikes* bristle-shaped; the lower ones female. All the *glumes* are destitute of awns. *Michaux*, *Pursh*.

5. Z. *terrestris*. Land Wild-Rice. Linn. Sp. Pl. 1408. Willd. n. 5. (Katou-Tsjolam; Rheede Hort. Malab. v. 12. t. 60. Raii Hist. Pl. v. 3. 617.)—Panicle nearly simple.—Native of sandy ground, on the coast of Malabar. *Stems* round, leafy, jointed. *Leaves* long and narrow, green, rigid, sharply pointed. *Flower-stalks* slender, from the sheaths of the leaves. *Glumes* leafy, bearing round, blackish, glassy *buds*, (we presume *seeds*). These bruised with the juice of Betle-nut, and applied to the tongue, are supposed to cure the thrush to which children are subject. *Ray*. We have seen no specimen. Linnæus described this species from the *Hortus Malabaricus* alone, and we presume its genus may, at least, be doubtful.

ZIZDRA, in *Geography*, a town of Russia, in the government of Kaluga; 60 miles S.W. of Kaluga. N. lat. 53° 43'. E. long. 34° 54'.

ZIZERIA, a word used by Apicius, and some other authors, to express the intestines of fowls of the gallinaceous kind, often used in decoctions for glysters, &c.

ZIZERS, or ZITZERS, in *Geography*, a town of the Grisons, in the Cadee league; 6 miles N. of Coire.

ZIZEVON, a town of Persia, in the province of Farsistan; 23 miles E.S.E. of Schiras.

ZIZIPHORA, in *Botany*, a mongrel name, composed, as it is said, of *Zizi*, an Indian word, and φέρω, *to bear;* but what is meant by *Zizi*, we are not informed. Morison appears to have received from Aleppo one of the species of this genus, under the name of *Ziziforum*, and Linnæus, with a slight correction, adopted it.—Linn. Gen. 16. Schreb. 21. Willd. Sp. Pl. v. 1. 123. Vahl Enum. v. 1. 216. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 1. 49. Sm. Prodr. Fl. Græc. Sibth. v. 1. 12. Juss. 111. Poiret in Lamarck Dict. v. 8. 865. Lamarck Illustr. t. 18. Gærtn. t. 66.—Class and order, *Diandria Monogynia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, cylindrical, very long, striated, bristly, with five minute marginal teeth, and bearded in the orifice. *Cor.* of one petal, ringent: tube cylindrical, the length of the calyx: limb minute; its upper lip ovate, flat, reflexed, undivided; lower spreading, broadest, in three round equal segments. *Stam.* Filaments two, simple, spreading, about the length of the corolla; anthers oblong, distant. *Pist.* Germen superior, four-cleft; style bristle-shaped, the length of the corolla; stigma cloven, pointed, inflexed. *Peric.* none, except the calyx remaining unchanged, a little gibbous at the base. *Seeds* four, oblong, obtuse, gibbous at one side, angular at the other, very much shorter than the calyx.

Eff. Ch. Corolla ringent; its upper lip reflexed, flat, undivided. Calyx thread-shaped. Seeds four.

The plants of this genus are slender, generally aromatic herbs, or diminutive shrubs, of humble growth, with the habit of *Thymus*, or *Clinopodium;* but distinguished by their long and slender *calyx*, as well as almost capillary tube of the *corolla*, even more than by having only two *stamens*. Their texture is hard and rigid, and they inhabit dry sunny situations. The *leaves* are opposite and undivided. *Flowers* whorled or capitate, red or purplish. *Root* mostly annual; sometimes perennial, and rather woody.

1. Z. *capitata*. Oval-leaved Ziziphora. Linn. Sp. Pl. 31. Mant. 317. Willd. n. 1. Vahl n. 1. Ait. n. 1. Sm. Fl. Græc. Sibth. v. 1. 10. t. 13. (Thymus humilis latifolius; Buxb. Cent. 3. 28. t. 51. f. 1. Clinopodium fistulosum pumilum Ind. Occid. summo caule floridum; Pluk. Phyt. t. 164. f. 4.)—Flowers fasciculated, terminal. Leaves ovate.—Native of Syria, Tauria, and the isle of Cyprus. A hardy annual, flowering in July and August, sometimes kept in botanic gardens. Miller seems to be the first person who raised this plant in England. The *root* is fibrous, branched and zigzag. *Stem* erect, three or four inches high, when cultivated much taller, square, leafy, usually with two opposite spreading branches, besides the central part, clothed all over with fine, short, curved, hoary pubescence. *Leaves* hardly an inch long, entire, hoary, roughish at the edges, furrowed with parallel veins. *Footstalks* one-eighth as long as the leaves. *Bracteas* four at the top of each branch, nearly sessile, like the leaves, but larger, more pointed and fringed; somewhat heart-shaped at the base; about the length of the *flowers*, which are numerous in each head. *Calyx* half an inch long, furrowed, bristly, a little wavy, with slender, sharp, purple teeth. *Corolla* with a white, downy, zigzag *tube*, and pale purplish *limb*. *Stamens* prominent, about as long as the lower lip, with blueish *anthers*. We scarcely perceive any aromatic flavour in the dried plant. Plukenet was much misinformed as to this *Ziziphora* being of West Indian origin.

2. Z. *hispanica*. Spanish Ziziphora. Linn. Syst. Nat. ed. 10. 853. Sp. Pl. 31. Amœn. Acad. v. 4. 263. Willd. n. 2. Vahl n. 2. Ait. n. 2.—Flowers axillary. Leaves obovate, pointed, many-ribbed.—Gathered by Lœfling in Spain. *Root* annual. The *stem* is three or four inches high, cross-branched and bushy, downy with minute recurved hairs. *Branches* leafy. *Leaves* a quarter or one-third of an inch long, fringed; tapering at the base; marked on both sides with conspicuous glandular dots: the lower ones smaller, and somewhat crenate. *Flowers* two or three together, sessile. *Calyx* tapering upwards, strongly furrowed, hispid, about the length of the leaves. *Corolla* externally downy. Linnæus considered the branches as *spikes* and the *leaves* as *bracteas*, but we can see no more reason for this than in any of the following species. The *leaves* in the original specimen still retain a powerful smell of Pennyroyal.

3. Z. *spicata*. Spiked Ziziphora. "An. Hist. Nat. Madr. v. 4. 254." Vahl n. 3.—"Flowers in racemose spikes, imbricated. Bracteas ovate, acute, ribbed. Leaves lanceolate, somewhat toothed."—Native of Spain. Annual. *Stem* from ten to eighteen inches high, throwing out from the base a branch or two as tall as itself. *Leaves* ribbed; the lower ones stalked; the upper sessile. *Flowers* several, on short stalks, standing near together. *Bracteas* broad, entire, acute, fringed. Perhaps a mere variety of Z. *hispanica*. Yet it seems to differ in having the stem *leaves* lanceolate, narrower than those that accompany the *flowers*, which are ovate, not obovate. *Vahl.* We have seen no specimen;

ſpecimen; but this deſcription ſeems to make the inflorescence of the preſent ſpecies really ſpiked rather than whorled, though it does not alter our opinion as to the laſt.

4. Z. *tenuior*. Spear-leaved Ziziphora. Linn. Sp. Pl. 31. Willd. n. 3. Vahl n. 4. Ait. n. 3. (Acinos ſyriaca, folio mucronato, capſulis hirſutis; Moriſ. v. 3. 404. ſect. 11. t. 19. f. 3; alſo A. ſyriaca, tenuiore folio, capſulis hirtis; ibid. f. 4.)—Flowers axillary. Leaves ovato-lanceolate, taper-pointed, acute, entire.—Native of Syria. Sent to Moriſon from Aleppo, by the Rev. Dr. Huntington. We preſume, from a remark of Moriſon under a plant immediately following, that the two varieties here indicated, as well as perhaps a third, with a ſmoother *calyx*, his f. 2, were all ſent him in ſeed, and that he raiſed the plants. If ſo the introduction of this ſpecies ſhould be dated before the time of Miller. The *root* is annual. *Stem* a ſpan high, with many ſquare, downy, leafy *branches*. *Leaves* an inch long, nearly ſeſſile, ſtrongly ribbed, downy, dotted, entire, more or leſs fringed with ſtrong white hairs. *Flowers* ſtalked, moſtly in pairs, altogether axillary. *Calyx* about half the length of the leaves, hoary with fine recurved pubeſcence, more or leſs intermixed with long, prominent, briſtly hairs; its lower part ſwelling much, as the ſeeds ripen. *Corolla* pale, hairy externally, with a dilated throat.

5. Z. *acinoides*. Baſil-leaved Ziziphora. Linn. Sp. Pl. 31. Willd. n. 4. Vahl n. 5. Ait. n. 4. (Clinopodium ſupinum incanum; Amm. Ruth. 51.)—Flowers axillary. Calyx hairy. Leaves ovate, ſtalked, ſomewhat ſerrated.—Native of Siberia. Introduced into England by the late Dr. William Pitcairn, in 1786. Mr. Aiton marks it as perennial. The *ſtems* are diffuſe, branched, bluntly quadrangular, finely downy. *Leaves* ſcarcely aromatic, though dotted with pellucid ſpots, many-ribbed, rough-edged, and ſomewhat fringed, from half to three-quarters of an inch long, on *footſtalks* about half or a third as much. *Flowers* all axillary, three, four, or more, together; on downy *ſtalks*, half the length of the footſtalks. *Calyx* cylindrical, ſtrongly ribbed, not downy, but beſet with numerous, prominent, horizontal hairs. *Corolla* hairy, its limb larger than in the firſt and ſecond ſpecies, ſcarcely ſo long as the third, of a light purple, or lilac, eſpecially the lip. *Anthers* large, ovate, purple.

6. Z. *taurica*. Narrow-leaved Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18.—Flowers axillary. Leaves linear-lanceolate, ſtriated, obtuſe, entire.—Native of mount Caucaſus and its neighbourhood, among lime-ſtone rocks, or about the ſtony banks of torrents, flowering in June and July. We received ſpecimens of this, and all the following ſpecies, from the Chevalier de Steven. The *root* is annual, long, tapering and zigzag. *Stems* one or more, ſcarcely divided, except at the bottom, aſcending, near a ſpan long, not compoſed of oppoſite *branches* croſſing each other, as in Z. *tenuior*, to which the author of the Flora Taurico-Caucaſica conſiders this plant very nearly allied. Without adverting to the greater ſize of the *corolla*, which is very likely to vary, and to the pubeſcence of the *calyx*, which certainly does, the *leaves* appear to be much narrower and more obtuſe; not acute or ſpinous-pointed. The whole herb ſmells ſtrongly, but pleaſantly, of Penny-royal, and its *leaves* are dotted as in the *tenuior*. One of our ſpecimens has broader *leaves* than the other, and rather ſhakes our opinion of its being a diſtinct ſpecies.

7. Z. *ſerpyllacea*. Thyme-headed Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18. (Serpyllum orientale, folio pulegii vulgaris; Tourn. Cor. 13.)

β. Bieberſt. ibid. (Serpyllum orientale, folio pulegii cervini; Tourn. Cor. 13. Herb. Tourn.)

Cluſters terminal, capitate, ſomewhat leafy. Leaves lanceolate, naked, even, obtuſe. Stems rather ſhrubby, aſcending.—Native of the graſſy hills of Caucaſus, flowering from June to Auguſt. β of open fields in Georgia, about Teflis; communicated by the Chevalier de Steven. The *ſtems* are rather woody, their *branches* hoary, with fine, recurved, denſe hairs. *Leaves* ſmooth, with copious pellucid dots, and the flavour of Penny-royal. They have a mid-rib, but no lateral ribs, veins, or furrows. *Flowers* ſtalked, crowded at the ſummit of each branch into a cloſe tuft, ſome of the lowermoſt being axillary. *Flower-ſtalks* round, clothed with fineſt poſſible hoary pubeſcence, as are alſo the ſtrong ribs of the *calyx*, whoſe teeth are fringed with long white hairs. Limb of the *corolla* rather large, and *ſtamens* prominent. The variety β, which is all we have ſeen, is ſaid to differ only in having narrower, perfectly entire, *leaves*, which are alſo more crowded than in α. If there be any affinity between the two varieties, neither of them can poſſibly be the Z. *ſerpyllacea* of Curt. Mag. t. 906. See the following ſpecies.

8. Z. *daſyantha*. Hairy-headed Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18. (Z. ſerpyllacea; Sims in Curt. Mag. t. 906. Ait. n. 5. Z. Pouſchkini; Sims in Curt. Mag. t. 1093. Ait. n. 6.)—Cluſters terminal, capitate, ſomewhat leafy. Calyx denſely hairy. Leaves ovate, obtuſe, notched. Stems procumbent.—Native of mountainous parts of Georgia, towards Caucaſus, flowering from July to September. Introduced into this country by Mr. Lodgiges. The *root* is perennial, and rather woody, as is the lower part of the ſpreading, nearly proſtrate, hairy, purpliſh *ſtems*. *Leaves* ſtalked, about a quarter of an inch long, roundiſh-ovate, ribbed and veiny, diſtantly ſerrated, dotted, roughiſh with ſhort hairs, eſpecially the ribs beneath. *Flowers* numerous, crowded into very denſe oval heads. *Calyx* in our ſpecimens quite concealed by very long, denſe, ſpreading, hoary hairs, much more remarkable than in any other known ſpecies. Limb of the *corolla* rather large. *Stamens* more or leſs prominent, though variable in length, with large *anthers*. The colour of the *flowers* may very well vary between the two extremes repreſented in the Botanical Magazine. The ſmell of the *herb* may alſo be variable. We cannot but think the original opinion of our judicious friend Dr. Sims far preferable to that which induced him to ſeparate the above two plants. Leſt we ſhould be wrong however, it is proper to announce that our ſpecimen of Z. *daſyantha*, from the Chevalier de Steven, has little or no ſcent, and agrees beſt with Z. *Pouſchkini*. The *Flora Taurico-Caucaſica* ſpeaks of a variety, found in the elevated fields of Georgia, in which the *leaves* are rather narrower, and the hairs of the *calyx* ſhorter, as well as fewer. The author eſteems this to be cloſely related to Z. *hiſpanica*, ſee n. 2, of which perhaps he had not examined an authentic ſpecimen. No two ſpecies of this genus, or any other, can be more diſtinct, than the Linnæan *hiſpanica*, and the plant of which we are treating.

ZIZIPHUS, perhaps *Zizipha* of Pliny, though reckoned by him among the kinds of apples; certainly *Ziziphus* of Columella; as well as of Caſpar Bauhin and others of the earlier modern botaniſts; ζίζιφι of the modern Greeks. Shaw, in his *Specimen Phytographiæ Africanæ*, n. 631, traces this word to the African or Mooriſh name of the ſame fruit *Aſafiſa*; but its Arabic appellation, *Zizouf*, comes much nearer.—Juſſ. Gen. 380. Tourn. t. 403. Lamarck Dict. v. 3. 316. Illuſtr. t. 185. Purſh 188.

 Gærtn.

Gærtn. t. 43. (Z. excluding PALIURUS, ſee that article; Willd. Sp. Pl. v. 1. 1102. Sm. Prodr. Fl. Græc. Sibth. v. 1. 159. Ait. Hort. Kew. v. 2. 18. Rhamni ſpecies; Linn. Gen. 105. Schreb. 142.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Dumoſæ*, Linn. *Rhamni*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, nearly flat, in five ſpreading, ovate, equal, coloured, deciduous ſegments. *Cor.* Petals five, minute, obovate, between the ſegments of the calyx, but much ſhorter, oppoſite to the ſtamens, ſpreading horizontally. *Stam.* Filaments five, ſhort, lying over the petals, and not half ſo long; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, orbicular, depreſſed; ſtyle one, very ſhort; ſtigmas two or three, obtuſe. *Peric.* Drupa oval, or roundiſh, pulpy, of one cell. *Seed.* Nut ſolitary, the ſhape of the drupa, of one or two cells, with ſolitary kernels.

Eſſ. Ch. Calyx flattiſh, in five deep ſegments. Petals five, oppoſite to the ſtamens. Drupa ſuperior. Nut of one or two cells.

Obſ. We have already (ſee RHAMNUS and PALIURUS) declared our determination of ſeparating all theſe genera, though, like Willdenow and ſome others, the writer of this has united *Ziziphus* and *Paliurus*, in the *Prodromus Fl. Græc.;* an error which will be corrected in the *Flora Græca* itſelf. With reſpect to ſome of the ſpecies, we can only rely on thoſe who have deſcribed the *fruit*, on which the diſtinction chiefly depends. They are all ſhrubby, and for the moſt part thorny, with alternate, ſimple, undivided, deciduous, ſtrongly ribbed *leaves*, and ſmall, axillary, tufted, ſometimes racemoſe and partly terminal, *flowers*, of a yellow or greeniſh colour, and inconſpicuous appearance; their *calyx* more flat, for the moſt part, than that of *Rhamnus*. The *fruit* is in moſt inſtances eatable, or medicinal. In a few inſtances, the *petals* are wanting.

Sect. 1. *Thorns or prickles none.*

1. Z. *lineata.* Veiny Jujube. Willd. n. 1. (Rhamnus lineatus; Linn. Sp. Pl. 281. Amœn. Acad. v. 4. 308. Oſbeck It. 219. t. 7. Engl. ed. v. 1. 353. t. 7.)—Stem erect, unarmed. Leaves roundiſh-ovate, obtuſe, wavy. Cluſters terminal; their lower flowers axillary.—Gathered by Oſbeck, on the French iſland, in the river of Canton, flowering in September. A buſhy ſhrub, often as tall as a man, with copious, alternate, round, leafy, finely downy *branches*. *Leaves* alternate, on ſhort ſtalks, of a roundiſh, abrupt, often emarginate, figure, half an inch long at moſt, ſmooth on both ſides; dark green above; paler and yellowiſh beneath, with very elegant, oblique, parallel, red veins. *Flowers* about the ends of the branches, ſtalked, partly axillary, partly collected into terminal ſmooth *cluſters*. *Calyx* a little concave, or bell-ſhaped, at the baſe; its ſegments lanceolate, as are likewiſe the *petals*. *Anthers* black before they burſt. *Drupa* ſmall, oval, ſeated on the orbicular permanent baſe of the calyx.

2. Z. *volubilis.* Twining Jujube. Willd. n. 2. Ait. n. 1. Purſh n. 1. (Rhamnus volubilis; Linn. Suppl. 152. Walt. Carol. 101. Jacq. Coll. v. 2. 236. Ic. Rar. t. 336.)—Stem twining, unarmed. Leaves ovate, acute, ſomewhat wavy. Umbels axillary and terminal, ſtalked.—In deep ſwamps, near the ſea-coaſt, from Virginia to Carolina, flowering in June. *Flowers* ſmall, greeniſh-yellow. *Fruit* oblong, violet-coloured. It aſcends the higheſt trees of *Cupreſſus diſticha*, in the Diſmal ſwamp, near Suffolk in Virginia, and is known there by the name of Supple-Jack. *Purſh.* The *branches* are round and ſmooth. *Leaves* ſtalked, drooping, one and a half or two inches long, and near one broad, acute, and tipped with a ſmall point, ſmooth, with oblique parallel veins, more numerous than in the laſt; their under ſide rather the paleſt. *Flowers* ſmall, pale. *Drupa* ſmall, blackiſh, of a long oval ſhape. *Nut* of two cells in the wild ſtate, according to Walter, though Jacquin, in the cultivated plant, found only one. Lamarck, in an obſervation at the end of this genus, though he allows this ſpecies to have the proper fruit of *Ziziphus*, gives his reaſons for keeping it in *Rhamnus;* theſe are the concave *calyx*, and the want of a fleſhy diſk, or, in Linnæan language, "receptacle of the flower." Probably the ſame remarks would apply to the preceding ſpecies, which Lamarck alſo excludes from *Zizyphus*. We are ready to allow that they both have more of the habit and foliage of *Rhamnus*, and their *fruits* are ſo ſmall, it may be difficult to ſay whether they are *drupas* or *berries*. Not having had an opportunity of inveſtigating this point ourſelves, we muſt rely on thoſe who have.

3. Z. *peruviana.* Peruvian Jujube. Lamarck n. 12.—Stem unarmed. Leaves elliptic-obovate, ſparingly and minutely toothed, ſomewhat angular, rather fleſhy, ſmooth. Petals acute, longer than the calyx.—Native of Peru. Long cultivated in the public garden at Paris, from whence the younger Linnæus procured a ſpecimen, and where Lamarck ſaw it flowering for many ſucceſſive years, but without producing fruit, which led him to ſuppoſe the flowers might be dioecious. The plant itſelf appears now to be no longer in exiſtence there, no mention being made of it in profeſſor Deſfontaine's Tableau de l'Ecole de Botanique au Jardin du Roi, ed. 2. printed in 1815. This is an evergreen, branching, looſely ſpreading *ſhrub*, about three feet high, ſmooth in every part. *Branches* a little zigzag, nearly round. *Leaves* ſcattered, ſtalked, from an inch to an inch and a half long, generally obovate, blunt, or ſometimes pointed, thick and ſomewhat fleſhy, of a glaucous green, with a mid-rib, and a few ſcattered veins, none of which ſeem to be viſible but in a dried ſtate, and then but ſlightly. The margin is irregularly angular, each angle tipped with a glandular tooth. Our ſpecimen has no *flowers*. Lamarck ſays they are ſmall, axillary, two or three together, or ſolitary, ſtalked, yellowiſh-white, widely expanded, five-cleft. *Petals* oval, pointed, flat, larger than the *calyx*.

4. Z. *emarginata.* Notched Jujube. Swartz Ind. Occ. 1954.—Stem erect, unarmed. Leaves roundiſh-ovate, emarginate. Umbels axillary, ſtalked. Petals none.—Gathered by Mr. Fahlberg, in the Weſt Indian iſland of St. Bartholomew. The *ſtem* is ſhrubby, with round, erect, rigid *branches*, whoſe bark is grey and ſmooth; their extremities angular. *Leaves* ſtalked, alternate, but approaching each other in pairs, ſo as to become nearly oppoſite, rather membranous, very ſmooth on both ſides, an inch or an inch and a half long, entire, the extremity only being ſlightly emarginate. *Footſtalks* ſhort. *Umbels* oppoſite. *Stalks* the length of the footſtalks, thickened as the fruit advances. *Partial ones* from three to ſix, rather longer, ſingle-flowered. *Calyx* concave, with a ſpreading limb, in five acute ſegments, divided as it were into two cavities. *Petals* none. *Filaments* very ſhort, inſerted below the diviſions of the calyx. *Anthers* ovate, embraced at each ſide by the hollows in the ſegments of the calyx. *Stigmas* two, obtuſe. *Drupa* roundiſh-ovate, ſmooth, the ſize of Allſpice, crowned with the permanent *ſtyle*. *Nut* of two cells, with ſolitary kernels. *Swartz.*

Sect. 2. *Branches prickly.*

5. Z. *Lotus.* Lotus Jujube. Willd. n. 4. Lamarck n. 2. Ait. n. 3. (Z. ſylveſtris; Tourn. Inſt. 627. Shaw Afric.

Afric. n. 632. f. 632. Rhamnus Lotus; Linn. Sp. Pl. 281. "Desfont. in Act. Paris, for 1788. 446. t. 21. Mungo Park's Travels, 99, with a plate.")—Prickles in pairs; one of them hooked. Leaves elliptic-oblong, flightly crenate, three-ribbed, fmooth on both fides.—Native of Africa, efpecially of the kingdom of Tunis, "in a tract called *Jereed*, which was formerly the country of the *Lotophagi*. The Arabs know this plant by the name of *Seedra*. It has the habit of a *Rhamnus*, and the *flowers* of the Common Jujube. But the *fruit* is fmaller, rounder, and fweeter; the fize of Sloes, with a large ftone. This *fruit* is borne on every part of the branches, like Goofeberries; whereas that of the Common Jujube grows only on the flender annual fhoots, thrown out from the ends of the branches. The *Z. vulgaris* is 20 feet, or more, in height, with a large furrowed *ftem*, twifted *branches*, knotty at the extremities, and larger oblong *leaves*; but the *Lotus* is fcarcely three or four cubits high, with numerous fhoots from the fame root, which are fmoother, ftraighter, and paler, or whitifh; the *leaves* fmall, round, and more rigid. The *fruit* is ripe, and fit for eating, in December and January." Such is Dr. Shaw's very intelligent account; to which we may add, that the *prickles* grow in pairs, both of them very ftraight, flender, and fharp, when young, but in procefs of time one becomes thick and hooked, the other much elongated, remaining quite ftraight. The *leaves* are at moft an inch long, perfectly fmooth, naked, and green, on both fides; their three ribs fometimes feparate, fometimes more or lefs combined.

6. Z. *Napeca*. Smooth Indian Jujube. Willd. n. 5. Lamarck n. 11. (Rhamnus Napeca; Linn. Sp. Pl. 282. Rh. n. 87; Linn. Fl. Zeyl. 36. Jujuba indica fpinofa, folio et fructu longiori; Pluk. Almag. 199. Prunus zeylanica fpinofa, &c.; Pluk. Phyt. t. 216. f. 6. Vidara littorea; Rumph. Amboin. v. 2. 119. t. 37.)—Prickles generally in pairs, hooked. Corymbs axillary, many-flowered. Leaves ovate, acute, finely ferrated, fmooth on both fides. Fruit elliptical.—Native of Ceylon, Amboyna, and other iflands of the Eaft Indies. We know this only by the fpecimen in the Linnæan herbarium, which does not quite agree with the defcription in the *Flora Zeylanica*, the *leaves* being neither oblique, unequal, nor bluntifh, but exactly as reprefented by Plukenet and Rumphius. The *branches* are fomewhat zigzag, round, or a little angular, with a fmooth whitifh bark; rough with mealy down when young, like the flower-buds, ftalks, and young leaves. *Prickles* ftout, recurved, dark brown. *Leaves* an inch, or an inch and a half long, elliptic-ovate, acute, tipped with a fmall glandular point, finely and bluntly ferrated, ftrongly three-ribbed; paler and yellowifh beneath. *Footftalks* quarter of an inch long, a little downy. *Flowers* very numerous, in denfe, compound, downy or mealy, corymbofe clufters, on fhort axillary ftalks. *Drupa* like an olive, elliptical, or fomewhat ovate; its flavour acid and aftringent. Rumphius fays, this fruit is feldom eaten but with falt, or as a fauce to fifh or other food, for the purpofe of exciting an appetite. Lamarck unites this fpecies, or at leaft its fynonyms, with the *Rhamnus Spina-Chrifti* of Linnæus, of which we fhall fpeak hereafter; fee n. 15.

7. Z. *Jujuba*. White-leaved Indian Jujube. Willd. n. 6. Lamarck n. 6. Ait. n. 4. (Rhamnus Jujuba; Linn. Sp. Pl. 282. Rh. n. 89; Linn. Fl. Zeyl. 36. Manffanas; Sonnerat Nouv. Guin. 134. t. 94. Malum indicum; Rumph. Amboin. v. 2. 117. t. 36. Perin-toddali; Rheede Hort. Malab. v. 4. 85. t. 41.)—Prickles folitary, deflexed. Corymbs axillary, many-flowered.—Leaves roundifh-ovate, obtufe; downy and fnow-white beneath.—Native of the Eaft Indies. A ftove plant in England, flowering in April and May. When wild, it makes a *tree* of a moderate fize. The *branches*, *flower-buds*, *ftalks*, and backs of the *leaves*, are all white with fine, denfe, entangled, rather ftarry, pubefcence. Form and fize of the *leaves* much like the laft, but rather rounder and more blunt; the margin crenate, or bluntly ferrated; upper fide very fmooth, of a fine green. *Inflorefcence* like the laft. *Flowers* white; fometimes fix-cleft and hexandrous. *Style* divided. *Drupa* globular, or fomewhat heart-fhaped. *Nut* rugged, with two green kernels. Sonnerat reckons this fruit among the beft that are the produce of New Guinea. Rheede fpeaks of it as "agreeably acid," and more olive-fhaped than in Sonnerat's figure. Cultivation perhaps may account for thefe differences. Hence we prefume *Z. mauritiana*, Lamarck n. 7, may be but a variety of this.

8. Z. *Xylopyrus*. Wooden-fruited Indian Jujube. Willd. n. 7.—"Prickles folitary, recurved. Leaves ovate, rather acute, fomewhat heart-fhaped; downy beneath. Flowers corymbofe."—Native of defert places, at the bottoms of hills in the Eaft Indies. A *tree*, fcarcely taller than a man. *Branches* hoary. *Leaves* broadly-ovate, often in fome degree heart-fhaped, not unfrequently oblique; unequally ferrated; dark coloured above; clothed beneath with very fine white down. *Prickles* few, fmall, folitary under each footftalk. *Flowers* in axillary ftalked corymbs. *Calyx* downy. *Drupa* dry, infipid, flightly aftringent, larger than a cherry. *Nut* rugged. *Retzius*, *Willd.* Poffibly this may be *Z. rugofa*; Lamarck n. 8, for which that author cites *Frutex bifnagaricus fpinofus*, &c.; *Pluk. Phyt.* t. 29. f. 7.

9. Z. *Oenoplia*. Velvet-leaved Jujube. Willd. n. 8. Lamarck n. 5. Mill. Dict. ed. 8. n. 3. (Rhamnus Oenoplia; Linn. Sp. Pl. 282. Rh. n. 88; Linn. Fl. Zeyl. 36. Jujuba aculeata, nervofis foliis, infra fericeis, flavis; Burm. Zeyl. 131. t. 61.)—Prickles folitary, conical, recurved. Leaves unequally ovate, or half-heartfhaped, acute; filky beneath.—Native of Ceylon. A fmall *tree*, with downy branches, and fhort, thick, hooked *prickles*. *Leaves* two inches long, very obfcurely ferrated; remarkably uneven or oblique at the bafe, the three ribs alfo being much nearer one margin than the other; the under fide finely filky and yellowifh; the upper alfo filky while young, but in a lefs degree. *Flowers* in little denfe, filky, axillary tufts.

10. Z. *iguanea*. Lizard Jujube. Lamarck n. 4. (Rhamnus iguaneus; Linn. Sp. Pl. 282. Jacq. Amer. 74. Jujube americana fpinofa, loti arboris foliis et facie, fructu rotundo parvo dulci; Commel. Hort. v. 1. 141. t. 73.)—Prickles in pairs, unequal, divaricated. Leaves ovate, pointed, ferrated, fmooth on both fides. Clufters axillary, monoecious. Petals wanting. Fruit roundifh.—Native of the Weft Indies, as well as of the neighbouring continent, in bufhy, rocky, or ftony places, where the *Lacerta Iguana*, reported to be fond of this fruit, is likewife frequently to be met with. This is an inelegant trailing *fhrub*, with round, zigzag, fcarcely downy, *branches*. *Leaves* thin, pliant, three-ribbed, very fmooth, two or three inches long, fometimes more, Jacquin fays eight inches, though rarely, in which cafe they are more elliptical. The *prickles* are long and flender, in pairs under each footftalk; one of them always ftraight; the fhorteft fometimes curved, but not remarkably. *Flowers* fmall, yellow, according to Jacquin deftitute of *petals*. *Drupa* roundifh or ovate, yellow, twice the fize of a pea, with a fweet pulp, and a rugged *nut*, of one cell. Willdenow feems to have omitted this fpecies entirely.

11. Z. *ſinenſis.* Chineſe Jujube. Lamarck n. 3. Deſfont. Tabl. 231.—“ Young branches prickly, downy; old ones unarmed. Leaves ovate-oblong, ſharply ſerrated. Petals reflexed under the calyx.”—Cultivated in the public garden at Paris, and ſaid to be a native of China. As this point is uncertain, how much better might the name of *cryptopetala* have been choſen! Lamarck deſcribes the preſent ſpecies as a *ſhrub*, only three or four feet high, loſing its ſlender, unequal, briſtle-like prickles as the *branches* advance in age. *Leaves* of a very pale green, crowded, three-ribbed, rather ſmaller than thoſe of *Z. vulgaris* hereafter deſcribed; we preſume they are quite ſmooth. *Footſtalks* ſhort and downy. *Flowers* ſmall, whitiſh, axillary, ſolitary or in pairs, remarkable for having their *petals* ſo completely reflexed, and concealed by the *calyx*, as not to be viſible when we regard the flower vertically. *Lamarck.*

12. Z. *rotundifolia.* Round-leaved Jujube. Lamarck n. 9. (Jujuba, ſive Ziziphus, zeylanica rotundifolia crenata minor, foliis ſubtus lanuginoſis; Pluk. Phyt. t. 197. f. 2. Burm. Zeyl. 132.)—“ Prickles in pairs; one of them recurved. Leaves roundiſh-oval; downy beneath.”—Native of Ceylon. *Leaves* ſmall, perhaps hardly an inch long, rather more rounded than in Plukenet's figure, ſlightly toothed; ſmooth above; cottony beneath; on very ſhort *footſtalks*. *Branches* ſlender, cylindrical. *Prickles* ſmall. An Indian ſpecimen in the Linnæan herbarium, attached to *Z. Napeca*, to which it certainly is very little related, agrees in many points with this deſcription of Lamarck, except that the very ſmall *prickles* are ſolitary, nor are the footſtalks very ſhort. We know not to what other ſpecies of *Ziziphus* to refer this ſpecimen. It is marked *Ber*, and ſaid to afford gum lac, which is collected from it by winged inſects.

13. Z. *angulata.* Angular-branched Jujube. Lamarck n. 10.—“ Prickles in pairs, ſtraight. Leaves roundiſh-oval, ſomewhat toothed, ſmooth on both ſides. Branches acutely angular.”—Deſcribed from the herbarium of Juſſieu, without fructification. The angular *branches* ſtrikingly diſtinguiſh this ſpecies from all the reſt. They are woody, ſmooth, zigzag, ſquare, with prominent acute angles. *Leaves* three-ribbed, an inch and a half broad, on ſhort *footſtalks*. *Lamarck.* Nothing is recorded of the native country of this plant.

14. Z. *vulgaris.* Common Jujube. Willd. n. 9. Lamarck n. 1. Ait. n. 5. Sm. Fl. Græc. Sibth. t. 241. (Z.; Dod. Pempt. 807. Zizypha; Camer. Epit. 167. Rhamnus Zizyphus; Linn. Sp. Pl. 282. Pall. Roſſ. v. 1. part 2. 24. t. 59. C. L. Willich Obſ. 5. Jujube Arabum, ſive Ziziphus Dodonæi; Ger. Em. 1501.)—Prickles in pairs, unequal. Leaves ovate, abrupt, bluntly ſerrated, ſmooth. Flowers in axillary tufts. Fruit elliptical.—Native of the ſouth of Europe. Gathered by Dr. Sibthorp about Megara, and on mount Parnaſſus. It has been cultivated in England ever ſince Parkinſon's days, but requires the ſhelter of a green-houſe, and though it may ſometimes bloſſom, never bears fruit. Pliny ſays the Jujube-tree was brought, in his time, from Syria into Italy. When wild it attains the ſize of a ſmall *tree*, with round, ſmooth, glaucous *branches*, zigzag and leafy when young. The *prickles* make no appearance on the young leafy ſhoots, but the following year they become ſtrong thorns, one of them an inch long, the other much ſhorter, and ſometimes, not always, recurved, as Willich well obſerves. *Leaves* rather crowded, deciduous, on ſhort ſtalks, ovate, ſomewhat tapering into a broad blunt point, frequently emarginate; their edges copiouſly though bluntly ſerrated; both ſurfaces ſmooth; the under paler, ſtrongly three-ribbed; their length an inch and a quarter or an inch and a half. *Flowers* yellowiſh, on ſhort ſtalks, in little axillary tufts, not much longer than the footſtalks. *Petals* obtuſe, half the length of the *calyx*. *Stigmas* two or three. *Drupa* the ſize and ſhape of an olive, blood-red, ſweet, mucilaginous, eſteemed good in foreneſs or inflammation of the mouth and throat, but are out of uſe in our preſent practice. If Pallas's plate above quoted be the true *Z. vulgaris*, of which we cannot help feeling ſome doubt, a compariſon of that plate with the old wooden cut of Camerarius, may ſerve to ſhew how ſuperior the artiſts of thoſe earlier times were to ſome of our modern delineators and colourers.

15. Z. *Spina Chriſti.* Chriſt's-thorn Jujube. Willd. n. 10. (Z. africana; Mill. Dict. ed. 8. n. 4. Rhamnus Spina Chriſti; Linn. Sp. Pl. 282. Oenoplia ſpinoſa; Cluſ. Hiſt. v. 2. 313. Nabca, Paliurus Athenæi credita; Alpin Ægypt. 16. t. 19. Jujube ſive Zizyphus africana, mucronatis foliis, ſpinâ gemellâ; Pluk. Almag. 199. Phyt. t. 197. f. 3.)—Prickles in pairs, ſtraight. Corymbs axillary, ſtalked, many-flowered. Leaves ovate, finely crenate, ſmooth on both ſides. Fruit globoſe.—Native of Ethiopia and Paleſtine. Seeds collected near Jeruſalem, by Haſſelquiſt, produced the plant deſcribed by Linnæus, a wild ſpecimen of which, ſent alſo by Haſſelquiſt, is preſerved in the Linnæan herbarium. Miller alſo raiſed this ſpecies from Syrian ſeeds, ſo that it is entitled to a place in Hort. Kew. Reſpecting Plukenet's ſynonym, we feel no doubt. The cut of Alpinus as much reſembles *Z. Napeca*, n. 6, in the foliage, but the globoſe *fruit* agrees beſt with the ſpecies before us. The *prickles* are hardly viſible on our ſpecimen, which is a young luxuriant leafy branch, in flower. They perhaps acquire their full proportion on older branches, as in *Z. vulgaris*, n. 14. The *leaves* are ſcattered, of a broad-ovate, ſomewhat roundiſh, obtuſe figure, two and a half or three inches long, and two wide, ſtrongly three-ribbed, with tranſverſe veins, minutely and ſlightly crenate rather than ſerrated, very ſmooth and even on both ſides; paler beneath. *Footſtalks* ſcarcely an inch long; downy on their upper ſide. *Corymbs* forked, downy, many-flowered, each on a ſolitary axillary ſtalk, ſhorter than the *footſtalk*. *Bracteas* awl-ſhaped. In our only expanded *flower*, the ſegments of the *calyx*, as well as the *petals* and *ſtamens*, are ſtrongly reflexed, quite under the baſe of the *calyx*. The *drupa* is ſaid to be the ſize and ſhape of a Sloe.

ZIZITH, in the *Jewiſh Cuſtoms*, a name given by the Jews to the tufts or fringes they uſed anciently to wear at the four quarters of their upper garments, but which they now only wear under their clothes, fixed to a ſquare piece of cloth, which repreſents the garment they anciently wore in their own country before their diſperſion. The zizith of the modern Jews is a tuſt made of eight threads of yarn, ſpun on purpoſe for this uſe, each having five knots, which take up half the length. That which is not knotted, being furled out, makes a kind of tuft or fringe. Numb. xv. 38. Deuter. xxii. 12. Leo of Modena, Cerem. of the Jews, part i. chap. 5. Calmet. Dict. Bibl. in voc.

ZIZYPHA, in *Botany*. See ZIZIPHUS.

ZLABINGS, in *Geography*, a town of Moravia, in the circle of Iglau; 28 miles W. of Znaym.

ZLATOUSTOVSKOI, a town of Ruſſia, in the government of Upha; 60 miles W. of Tcheliabinſk.

ZLEBY, a town of Bohemia, in the circle of Czaſlau; 4 miles S.E. of Czaſlau.

ZLIN, a town of Moravia, in the circle of Hradiſch; 15 miles N.N.E. of Hradiſch.

ZLOTI, a money of account in Poland, where accounts are kept in zloti, guldens, or florins of 30 groſchen or groſz, grofz, and each grofchen is divided into 18 pfenings. The florin alfo contains $2\frac{1}{2}$ fkoftacks, 90 fchillings, or 270 pfenings. A fkoftack is worth 12 grofchen, or 36 fchillings; a grofchen, 3 fchillings; and a fchilling, 3 pfenings.

ZMEINOGORSKAIA, in *Geography*, a fort of Ruffia, on the river Porobalika; 200 miles S. of Kolivan. N. lat. 51° 10′. E. long. 82° 10′.

ZMILACES, in *Natural Hiftory*, a name given by Pliny to a ftone found in the river Euphrates, refembling marble, and of a blueifh-green colour.

ZMILAMPIS, the name of a gem, defcribed by Pliny and the ancients, which they tell us was very like the Proconnefian marble, except that in the centre of the ftone there was always a blueifh fpot, refembling the pupil of an eye.

The Proconnefian marble of the ancients was of a fine clear and elegant white, variegated with irregular black veins. Pliny's defcription is fo fhort, that it has been fuppofed from him that the zmilampis was a fort of marble; he only fays of it, that it was like the Proconnefian marble, but blue in the middle. Many had inferred from this, that he meant no more by it than that this was a ftone, which had blue veins inftead of the black ones in the Proconnefian kind. But when we examine the reft of the ancients, and find that it was a fmall ftone, found in the river Euphrates, and worn in rings, and that its blue fpot was like a pupil of an eye, we may eafily determine that it was one of thofe gems which we call *oculus beli*, or *bellocchio;* of which there is a vaft variety found in the rivers of the Eaft Indies, and many have a fine opaque white ground, and a blueifh or greenifh fpot for the pupil.

ZMILANTHES, a name given by Solinus and fome others to a gem called by the more correct writers *zmilampis*.

ZNAMENSKOI, in *Geography*, a town of Ruffia, in the government of Tobolfk, on the Irtifch; 28 miles N.N.W. of Tara.

ZNAYM, a town of Moravia, in the circle of the fame name, near the river Teya. This town was built about the year 1222, at a little diftance from another town, laid wafte by the Bohemians. It contains a citadel, four cloifters, and a college; the circle borders on Auftria; 68 miles S.W. of Olmutz. N. lat. 48° 48′. E. long. 15° 51′.

ZNENDEI, a river of Ruffia, which runs into the Vitim, N. lat. 53°. E. long. 115° 14′.

ZNIN, a town of the duchy of Warfaw; 20 miles N. of Gnefna.

ZNONIGRAD, a town of Croatia; 36 miles S. of Bihacs.

ZOAGLI, a town of Genoa; 20 miles E. of Genoa.

ZOANA, in *Ancient Geography*, a town of Afia, in the Leffer Armenia, upon the route from Satala to Arabiffus, between Tonofa and Gundufa. Anton. Itin.

ZOANNES, a name given by Strabo to a people half-favage, that inhabited the mountains of the Colchide.

ZOAR, ZOARA, *Segor*, or *Bela*, a city of Pentapolis, on the fouthern extremity of the Dead fea. It was preferved by deftruction from fire by means of the interceffion of Lot. (Gen. xiv. 2.) Its name before this circumftance was Bela; but when Lot requefted it to be fpared as a place of refuge for himfelf, he reprefented it as a *fmall* place; and hence it had the name *Zoar*, or Segor, which, in Hebrew, fignifies fmall or little. The Romans kept a garrifon at Zoar. St. Jerom obferves, that the name Bela was given to this city, becaufe, as foon as Lot left it, an earthquake caufed it to be fwallowed up; *bela* in Hebrew fignifying to fwallow up. Jerom alfo fays, that the Hebrews think that Zoar bears alfo the name of Shalifha. (1 Sam. ix. 4.) They pretend that this city has been often demolifhed by earthquakes.

ZOAR, in *Geography*, a town of Arabia, in the province of Hedsjas, on the fouth coaft of the Dead fea, at the mouth of the Safia; 30 miles N. of Karac.

ZOAR. See TSOR.

ZOARA, a town of Africa, in the country of Tripoli; 60 miles W.N.W. of Tripoli.—Alfo, a town of Africa, in the country of Barca; 140 miles S.W. of Tolometa. N. lat. 32° 35′. E. long. 11° 56′.

ZOBAYA, a town of Mexico, in the province of Guatimala; 30 miles N. of Guatimala.

ZOBEIR, a town of the Perfian empire, in the pachalic of Bagdad, about 10 miles W. of the city of Baffora, fituated on the dry canal of the Djurre Zade, fuppofed to be the former bed of the Euphrates. It is by fome faid to be the ancient Bafra, and derives its prefent name from Zobeir, who was defeated and flain in the battle of the Camel, fought near this place.

ZOBELN, a town of the duchy of Courland; 20 miles E. of Goldingen.

ZOBERA, a town of Arabia, in the province of Yemen; 35 miles S.E. of Chamir.

ZOBERN, a town of Saxony, in the Vogtland; 8 miles W. of Oelfnitz.

ZOBIN, a town of Germany, in the principality of Oettingen Wallerftein; 6 miles W.N.W. of Nordlingen.

ZOBING, a town of Saxony, in the margravate of Meiffen; 15 miles S. of Deffau.—Alfo, a town of Auftria; 3 miles N. of Crems.

ZOBLITZ, a town of Saxony, in the circle of Erzgebirg. This place confifts of 110 houfes, and the inhabitants fubfift principally by working the ferpent-ftone, which is found here, into pitchers, bowls, tea and coffee difhes, mortars, cups, &c. The ferpent-ftone is dug juft above the town, and farther on to the eaft of it is found a red fpecies, which is reckoned among the fineft, and for that reafon is alfo confidered by the fovereign as his property, together with a yellow, green, grey, and black fort. In the electoral red quarry is alfo found afbeftos of divers colours and granites; 17 miles S. of Freyberg. N. lat. 50° 36′. E. long. 13° 11′.

ZOBOWITZ, a town of Pomerelia; 14 miles S. of Dantzic.

ZOBTEN, a town of Silefia, in the principality of Schweidnitz; 9 miles E.N.E. of Schweidnitz. N. lat. 50° 48′. E. long. 16° 41′.

ZOBTENBERG, a mountain of Silefia, fituated in a country otherwife level, 2424 Paris feet above the level of the fea, near Zobten.

ZOCCO, ZOCCOLO, *Zocle*, or *Socle*, in *Architecture*. See SOCLE.

ZOCELAR, in *Geography*, a town of Croatia; 2 miles S.W. of Bihacs.

ZOCHINACAZTLIS, in *Botany*, a name by which fome authors have called the *flos auriculæ*, a flower of New Spain, ufed in making of the Spanifh chocolate.

ZODIAC, ZODIACUS, in *Aftronomy*, a fafcia, or broad circle, whofe middle is the ecliptic, and its extremes two circles parallel to it, at fuch diftance from it, as to bound, or comprehend, the excurfions of the fun and planets.

The word is formed from the Greek ζωον, *animal*, by reafon of the conftellations in it, which have the forms of animals given them; others derive it from ζωη, *life*, from an an opinion, that the planets have a great influence on animal life.

The fun never deviates from the middle of the zodiac; *i. e.* from the ecliptic: the planets all do more or lefs. Their greateft deviations, called latitudes, are the meafure of the breadth of the zodiac; which is broader, or narrower, as the greateft latitude of the planets is made more or lefs. Accordingly fome make it 16, fome 18, and fome 20 degrees broad.

The zodiac interfecting the equator obliquely makes an angle with it of 23 degrees and a half; or, more precifely, of 23° 29′; which is what we call the *obliquity of the zodiac*, and is the fun's greateft declination. See Ecliptic.

The zodiac is divided into twelve portions, called *figns*; and thofe divifions, or figns, are denominated from the conftellations which anciently poffeffed each part. But the zodiac being immoveable, and the ftars having a motion from weft to eaft, thofe conftellations now no longer correfpond to their proper figns; whence arifes what we call the *preceffion of the equinoxes*.

When a ftar, therefore, is faid to be in fuch *a fign of the zodiac*, it is not to be underftood of that fign, or conftellation, of the firmament, but only of that twelfth part of the zodiac, or dodecatemory of it.

Caffini has alfo obferved a tract in the heavens, within whofe bounds moft of the comets, though not all of them, are obferved to keep, which, for this reafon, he calls the *zodiac of the comets*.

This he makes as broad as the other zodiac, and marks it with figns, or conftellations, like that; as Antinous, Pegafus, Andromeda, Taurus, Orion, the Leffer Dog, Hydra, the Centaur, Scorpion, and Sagittary.

Zodiac, *Hindoo*. The early inveftigators of Hindoo mythology, which comprehends not only their aftronomy, but every fcience, and almoft every art, of which the Hindoos have any knowledge, were furprifed to find that the days of the week were named, as with us, after the planets, and in the fame order. It was natural enough to fuppofe that the Hindoo almanac was borrowed from the Arabians. The few Brahmans who at that time had accefs to Europeans of fcience, fuppofed the fame of us, when they difcovered the fimilitude of fable and of name. But it has been made manifeft by the inveftigations of later writers, that the Hindoo zodiac is of very great antiquity. Such of our readers as may be defirous of extended information hereon, are referred to the differtations of fir William Jones and Mr. Colebrooke; on the Hindoo zodiac, in the 2d and 9th volumes of the Afiatic Refearches; and to the Hindoo Pantheon. In both works, plates of the Hindoo zodiac are given from different authorities; and in the latter work feparate engravings alfo of the perfonified planets. We will extract from it a fort of table, fhewing the Englifh and Sanfkrit names, and the vehicles affigned to the feveral planets by the latter fabulifts.

Names of Planets, &c.		Days over which they refpectively prefide.		Vehicles or Seats, according to the Plate of	
Englifh.	Sanfkrit.	Englifh.	Sanfkrit.	Sir William Jones.	The Hindoo Pantheon.
Sun	Surya	Sunday	Aditvar	Lion	Chariot
Moon	Soma	Monday	Somavar	Antelope	Antelope
Mars	Mangala	Tuefday	Mangalvar	Horfe	Ram
Mercury	Boodh	Wednefday	Budhvar	Eagle	Carpet
Jupiter	Vrihafpati	Thurfday	Vrihafpatvar	Boar	Do.
Venus	Sukra	Friday	Sukervar	Camel	Rat
Saturn	Sani	Saturday	Sanivar	Elephant	Raven
Dragon's Head	Ketu			Frog	Carpet
Dragon's Tail	Rahu			Tortoife	Owl

Under the Sanfkrit names of the planets we have given fhort articles defcriptive of their mythological and hiftorical attributes and allufions. To them (Surya, Soma, &c.) we therefore refer for farther particulars, and to the article Vahan for an account of the vehicles affigned to them and other mythological perfonages of Hindoo fable.

ZODIACAL Light, a brightnefs refembling that of the milky way, but lefs bright, and which is fometimes perceived in the heavens, at certain times of the year, after fun-fet, or before its rife. Some have fuppofed, that this phenomenon is the fame with that which the ancients called *trabes*, a term by which they denoted a meteor, or impreffion in the air like a beam. Thus Pliny (lib. ii.) fays, "emicant trabes, quos docos vocant." The form of this light refembles that of a pyramid, lying lengthways in the zodiac, within which its point and axis are always enclofed, its bafe being towards the fun, and placed obliquely with refpect to the horizon. In the torrid zone, the zodiacal light is frequently, or almoft conftantly, feen. At or near our latitude it may be feen about the time of the equinoxes. The beft time for feeing it is about the 1ft of March, at 7 o'clock in the evening, when the twilight is ending, and the equinoctial point in the horizon. This phenomenon was firft difcovered by Defcartes, and by Childrey about the year 1659. It did not engage general attention till it was defcribed and named by M. Caffini the elder, in 1683. It was afterwards obferved by M. Fatio, in 1684, 1685, and 1686, and by M. Kirch and Eimmart, in 1688, 1689, 1691, 1693, and 1694. See Mairan, Suite des Mem. de l'Acad. Royale des Sciences, 1731, p. 3.

In 1707, April 3, it was obferved by Mr. Derham in Effex. It appeared in the weftern part of the heavens, about a quarter of an hour after fun-fet, in the form of a pyramid, perpendicular to the horizon. The bafe of this pyramid he judged to be the fun. Its vertex reached 15° or 20° above the horizon. It was throughout of a dufky-red colour, and at firft appeared pretty vivid and ftrong, but fainteft at the top. It grew fainter by degrees, and vanifhed about an hour after fun-fet. This folar atmofphere has alfo been feen about the fun in a total folar eclipfe, a luminous ring appearing about the moon at the time when the eclipfe was total.

M. Fatio conjectured that this appearance arifes from a collection of corpufcles encompaffing the fun in the form of a lens, reflecting the light of the fun. M. Caffini fuppofed that it might arife from an infinite number of planets revolving about the fun; fo that this light might owe its exiftence to thefe bodies, as the milky way does to an innumerable number of fixed ftars. It is now, however, generally fuppofed, that it is matter detached from the fun by its rotation about its axis. The velocity of the equatorial parts of the fun being the greateft would throw the matter to the greateft diftance, and on account of the diminution of velocity towards its poles, the height to which the matter would there rife would be diminifhed; and as it would probably fpread a little fideways, it would form an atmofphere about the fun fomething in the form of a lens, whofe fection perpendicular to its axis would coincide with the fun's equator. And this agrees very well with obfervation. There is, however, a difficulty in thus accounting for this phenomenon. It is very well known that the centrifugal force of a point of the fun's equator is a great many times lefs than its gravity. It does not appear, therefore, how the fun, from its rotation, can detach any of its grofs particles. If they be particles detached from the fun, they muft be fent off by fome other unknown force; and in that cafe they might be fent off equally in all directions, which would not agree with the obferved figure. The caufe is probably owing to the fun's rotation, although not immediately to the centrifugal force arifing therefrom.

The zodiacal light, according to M. de Mairan's ingenious and plaufible hypothefis, is nothing but the folar atmofphere, a rare and fubtile fluid, either luminous by itfelf, or made fo by the rays of the fun furrounding its globe; but in a greater quantity, and more extenfively about its equator than any other part. As it always accompanies the fun, it is natural to afcribe it to a folar atmofphere, extending beyond the orbit of Mercury, and fometimes even beyond that of Venus. Accordingly, the zodiacal light has been fuppofed to be a fection of this atmofphere, which, being extremely flat at its poles, cannot be conceived to partake of the fun's monthly motion. Dr. T. Young (Lectures, vol. i. p. 502.) obferves, that the only probable manner in which it can be fuppofed to retain its figure, is by means of a revolution much more rapid than that of the fun's motion. To that purpofe, M. de la Lande remarks, that it feems now to be generally believed, that the zodiacal light is the atmofphere of the fun; for it always accompanies that luminary; and the equator of the fun is in the direction of this light: confequently he fays, that in all probability the zodiacal light is an atmofphere fituated round the fun, in the direction of its equator, and flattened by its rotatory motion. Aftrom. Paris, 1771. § 845 to 849.

The zodiacal light is more or lefs vifible according to circumftances; but the folar atmofphere is not always vifible by means of this light, though it be always feen about the globe of the fun in total eclipfes.

One of the moft effential circumftances for the perception of the folar atmofphere by the zodiacal light is its having fufficient length on the zodiac; for without this its brightnefs is entirely hid from us by the twilight.

M. de Mairan fays, it may be proved from many obfervations, that the fun's atmofphere fometimes reaches as far as the earth's orbit, and there meeting with our atmofphere produces the appearance of an aurora borealis.

The length of the zodiacal light varies fometimes in reality, and fometimes in appearance only, from various caufes.

The oblique pofition of this light, little different from that of the plane of the ecliptic, does not permit us to fee it diftinctly, and fufficiently elevated above the horizon; but fome time after fun-fet, towards the end of the winter, and in fpring, or before fun-rifing in autumn, and towards the beginning of winter. Several caufes hinder our feeing it, any more than the milky way; fuch as moon-light and ftrong twilights, among others.

M. Caffini often mentions the great refemblance of the zodiacal light to the tails of comets. M. Fatio has made the fame obfervation; and M. Euler has lately endeavoured to prove them owing to fimilar caufes. Decouverte de la Lumiere Celefte que paroit dans le Zodiaque, art. 41. Lettre à M. Caffini, printed at Amfterdam, 1686. Euler, in Mem. de l'Acad. de Berlin, tom. ii.

The figure of this folar atmofphere muft be lenticular, or that of a flatted fpheroid. M. de Mairan gives us a draught of its appearance and projection.

The extent of the zodiacal light from the fun to its point is feldom lefs than 45, fometimes 150 degrees in length; M. Pingré being on the torrid zone faw it 120 degrees: and its breadth varies from 8 to 30 degrees.

This light feems to have no other motion than that of the fun itfelf.

M. Euler obferves, that if the fun has an atmofphere, the force of the impulfe of light iffuing from that globe muft drive particles of that atmofphere before it; but as gravity is very ftrong at the fun, this impulfe would never drive thofe particles beyond the limits of their atmofphere, were it not for the centrifugal force arifing from the fun's motion round its axis. This being oppofite to the action of gravity, diminifhing its effects, the impulfe of the light may confiderably dilate the figure of the folar atmofphere, from what it would be if it arofe from the gravity and centrifugal force of its particles only: and this dilatation will be very confiderable near the fun's equator, and very fmall towards its poles. The action of light thus diminifhing the action of gravity, M. Euler attempts to calculate how far this diminution of gravity may increafe the extent of the fun's atmofphere about its equator. He finds a cubic equation, the roots of which exprefs the femi-axis, or greateft amplitude of this atmofphere. He adds, that this equation having three real roots, it is poffible that the folar atmofphere may become a ring furrounding the fun's globe, as the ring of Saturn furrounds the body of that planet. As the electric fluid is now generally acknowledged to be the caufe of the aurora borealis, which M. de Mairan afcribes to the folar atmofphere, which produces the zodiacal light, and which is thrown off principally and to the greateft diftance from the equatorial parts of the fun, in confequence of his rotation on his axis, and extending vifibly, in the form of a luminous pyramid, as far as the orbit of the earth, falls into the upper regions of our atmofphere, and is collected chiefly towards the polar parts of the earth, in confequence of the diurnal revolution, where it forms the aurora borealis: it is no improbable conjecture, that the fun may be the fountain of the electric fluid, and that the zodiacal light, and the tails of comets, as well as the aurora borealis, lightning, and artificial electricity, are its various and not very diffimilar modifications. See *Theory of* ELECTRICITY.

ZODZISZKI, in *Geography*, a town of Lithuania, in the palatinate of Wilna; 52 miles E. of Wilna.

ZOEGEA, in *Botany*, was fo named by Linnæus, in honour of his pupil and correfpondent Dr. John Zoega, who vifited Iceland, and communicated from thence, as well as from the neighbouring ocean, many new or rare plants, efpecially of the cryptogamic tribes, to the great Swedifh naturalift. Dr. Zoega wrote a *Flora Iflandica*, which has been ſeveral times printed, with Olafsen's, and von Troil's, accounts of that country. In the latter book this *Flora* is a mere catalogue of Linnæan names, the ſynonyms and deſcriptions being omitted. He wrote alſo a mineralogical work on Zeolites. The plant which bears his name was raiſed in the Copenhagen garden, from Siberian ſeeds, and communicated by himſelf to Linnæus.—Linn. Mant. 15. Schreb. Gen. 577. Willd. Sp. Pl. v. 3. 2276. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 143. Juſſ. 174. Poiret in Lamarck Dict. v. 8. 868. Gærtn. v. 2. 452.—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ capitatæ*, Linn. *Cinarocephalæ*, Juſſ.

Gen. Ch. *Common Calyx* ovate, imbricated, of numerous lanceolate, fringed ſcales; the inner ones linear-lanceolate, chaffy, longeſt. *Cor.* compound, radiant. Florets of the diſk numerous, perfect, of one petal, with a ſlender tube, and a limb in five deep, lanceolate, erect ſegments: thoſe of the radius fewer, neuter, of one flat, ligulate, abrupt, ſharply five-toothed petal. *Stam.* in the florets of the diſk, Filaments five, ſhort; anthers united into a cylindrical tube. *Piſt.* in the ſame florets, Germen ſhort; ſtyle capillary, very long, erect; ſtigma ſhort, cloven: in the radiant florets, Germen a rudiment only, without ſtyle or ſtigma. *Peric.* no other than the unaltered cloſed calyx. *Seeds* in the florets of the diſk, ſolitary. Down briſtly. In the radius none. *Recept.* briſtly.

Eſſ. Ch. Receptacle briſtly. Seed-down of ſimple briſtles. Florets of the radius ligulate. Calyx imbricated.

Obſ. Linnæus juſtly obſerves that this genus is very intimately related to Centaurea (ſee that article). Indeed the only difference conſiſts in the flat, or ligulate, not tubular, florets of the radius. How far that diſtinction is ſufficient, ſome perſons have doubted; eſpecially as the preſence of the radiant florets themſelves in *Centaurea*, has been thought but a caſual occurrence, equivalent to double flowers in other natural orders. As long, however, as the Syngeneſious family continues to be characterized at all by the different figure of the florets, *Zoegea* muſt remain ſeparate from *Centaurea*.

1. Z. *Leptaurea*. Yellow Zoegea. Linn. Mant. 117. Suppl. 383. Willd. n. 1. Ait. n. 1. L'Herit. Stirp. Nov. 57. t. 29. (Z. aleppica; Jacq. Col. v. 1. 89. Ic. Rar. t. 177.)—Native of Siberia, according to a manuſcript correction of Linnæus in his own Mantiſſa: other authors ſay, of the Levant. It appears to have been cultivated in Mr. Blackburne's celebrated garden at Orford, Lancaſhire, before the year 1779, when the catalogue of that rich collection was printed. This plant is a hardy annual, flowering in July and Auguſt. The *ſtem* is much branched, ſpreading in every direction, leafy, angular and roughiſh, twelve or eighteen inches high. *Leaves* alternate, diſtant, roughiſh, entire; the lower ones pinnatifid; the reſt undivided, obtuſe, tapering down into a *footſtalk*. *Flowers* ſolitary, on long terminal ſtalks, large, near two inches broad. *Scales* of the *calyx* delicately fringed with tawny briſtles. *Corolla* of a ſhining golden yellow.

Another ſpecies is deſcribed in the *Supplement* by Linnæus himſelf, under the name of *Z. capenſis*. This is *Relhania pedunculata* of L'Heritier. See Willd. Sp. Pl. v. 3. 2136, and is the ſame thing as *Athanaſia pumila*, Linn. Suppl. 362.

ZOFALA, in *Geography*. See Sofala.

ZOFFANY, Johan, in *Biography*, was born at Frankfort, about the year 1735. He came to England as a painter of ſmall portraits when he was about 30 years of age. After paſſing ſome time with very little encouragement, he at length was fortunate enough to attract public attention by a portrait of the earl of Barrymore, and thenceforward enjoyed conſiderable favour and encouragement. The moſt conſiderable of his productions at this period were portraits of the moſt celebrated dramatic performers in their favourite characters; as Garrick, in Abel Drugger, ſir John Brute, and lord Chalkſtone, &c.; Foote, in major Sturgeon; and Jacob, as Jacob Gallop; Foote and Weſton, as Dr. Laſt and the Preſident, in the Devil on Two Sticks; Parſons, Moody, Branſby, Aicken, and many others, whoſe likeneſſes he preſerved moſt admirably, with all the variety of expreſſion required for the characters they perſonified. One picture he painted of the members of the Royal Academy, in the hall of the Academy devoted to the ſtudy of the living figure, round which they here aſſembled, and it received univerſal applauſe.

He had the honour to be employed by his majeſty, and painted portraits of the royal family; and he was engaged by the queen to paint for her a view of the Tribune of the Gallery at Florence. He was ſomewhat of a humouriſt, and it is ſaid of him, that whilſt he was engaged painting in the Florentine Gallery, the emperor of Germany viſited the grand duke, and coming up to Zoffany in the Gallery, was much pleaſed with his performance, and aſked him his name; and on hearing it, inquired what countryman he was; when he anſwered, an Engliſhman. Why, ſaid the emperor, your name is German. True, returned the painter, I was born in Germany, that was accidental; I call that my country where I have been protected!

Soon after his return from Italy, he went to the Eaſt Indies, where he was much employed, and acquired a conſiderable fortune; but it diſappeared upon his return home, and was only reſtored by a ſecond adventure to the ſame hot-bed of wealth and diſeaſe. He again returned to England, but with diminiſhed powers: yet he ſtill continued to paint, and, among other works, produced an elaborate picture of the ſacking of the wine vaults at the Tuileries, in 1792; a diſguſting diſplay of the atrocities of that eventful period. He lived to a very advanced age, but was reduced exceedingly in intellectual powers for ſome years before his deceaſe, which happened in 1808. He was a member of the Royal Academy.

ZOFFINGEN, in *Geography*, a town of Switzerland, in the canton of Berne, on the Wigger. It was at one time imperial, after which it put itſelf under the count of Habſburg. In the 13th century it was ſubject to the houſe of Auſtria, from which it was taken by the Bernois, in the year 1415, and is the principal place of a bailiwick, with conſiderable privileges; 26 miles N.N.E. of Berne.

ZOGNO, a town of Italy, in the department of the Serio; 5 miles N. of Bergamo.

ZOGOCARA, in *Ancient Geography*, a town of Aſia, in Greater Armenia. Ptol.

ZOGOR, in *Geography*, a town of Thibet; 16 miles W.S.W. of Zuenga.

ZOHAUB, one of the diſtricts of the province of the Lower Kurdiſtan, in the pachalic of Bagdad, which has a ſeparate hakem or governor. See Solymania.

ZOHAUK, a town of Grand Bucharia; 12 miles N.E. of Bamian.

ZOHRA, a town of Egypt, on the left bank of the Nile; 5 miles N.N.E. of Miniet Ebn Kaſib.

ZOIKA, a town of Ruſſia, in the government of Archangel, near the mouth of the Petchora; 160 miles N.E. of Mezen.

ZOILUS, in *Biography*, a carping critic belonging to the claſs of grammarians, was a native of Amphipolis, and lived

lived in the time of Ptolemy Philadelphus, about the year B.C. 270. His natural difpofition to depreciate eminent characters is faid to have been ftrengthened by the courfe of his education, as a difciple of Polycrates, who wrote an accufation againft Socrates. This difpofition, which he was in the habit of indulging, gave occafion to his being denominated the rhetorical dog; rhetorical, as his ftyle was elegant, and dog, from his practice of fnarling. Both his perfon and mind are very unfavourably exhibited by Ælian; who fays of him, that being once afked, why he *fpoke* ill of all mankind?—he replied, "becaufe I cannot *do* ill to them." Ambitious of gaining reputation, he endeavoured to acquire it by degrading others; and valued himfelf by having eftablifhed a kind of claim to the title of "Homeromaftix," or the fcourge of Homer. Suidas informs us, that he wrote nine books of grammatical remarks upon this poet. Plato and Ifocrates, as well as Homer, were objects of his critical feverity. Zoilus was the author of feveral works; particularly a hiftory commencing from the theogony, and continued to the death of Philip of Macedon, and a hiftory of his own city. His attack upon Homer feems to have been an unpardonable offence, and threw a fhade over every other good quality he poffeffed; for if we may credit Dionyfius of Halicarnaffus, he teftifies that he was actuated by the love of truth, and he ranks him with Ariftotle, and other eminent philologifts. But his virtues and talents, whatfoever they were, could neither fecure him from poverty whilft he lived, nor guard his memory from reproach. Vitruvius reports, that when he vifited Alexandria, he recited his writings againft the Iliad and Odyffey of Homer to king Ptolemy, which gave the king fuch offence, that he would take no notice of him; and afterwards, when urged by indigence, he folicited charitable affiftance, Ptolemy repulfed him with this contemptuous reflection; that if Homer, who had been dead 1000 years, could by his works give maintenance to many thoufand people, a writer fo much his fuperior might furely maintain himfelf. It is further faid, that the king was fo much difpleafed with his conduct, that he treated him as if he had been guilty of parricide; and that he was put to death, as fome fay, by crucifixion, and as others fay by ftoning; and according to another account, he was burnt alive at Smyrna. Vitruvius adds, "that whichfoever of thefe was his fate, he well deferved the punifhment." The penalty, however, if this ftatement be true, feems to have been much more than adequate to the offence. Ælian Hift. Var. Voff. Hift. Græc. Gen. Biog.

ZOISITE, in *Mineralogy*, *Epidote*, Haüy, a mineral fo called by Werner after baron Von Zoïs of Laybach.

Common Zoifite.—Its colours are yellowifh and blueifh-grey; it occurs maffive and cryftallized in very oblique four-fided prifms. The cryftals are middle-fized, and deeply ftreaked longitudinally. The ftructure is lamellar, and the joints parallel with the axis of the cryftal. The internal luftre is fplendent; the luftre of the crofs fracture is gliftening, and between pearly and refinous; it is tranflucent, hard, and eafily frangible. The fpecific gravity is 3.31. According to Klaproth, the conftituent parts are,

Silex - - - -	42
Alumine - - -	29
Lime - - - - -	21
Oxyd of iron - -	3
	95

Friable Zoifite is of a reddifh-white colour, fpotted with pale peach-bloffom red; it occurs maffive. The fracture is intermediate, between earthy and fplintery; the fragments are very fharp-edged, and tranflucent on the edges; it is rather hard and brittle. The fpecific gravity of this mineral is 3.3. According to Klaproth, its conftituent parts are,

Silex - - -	44
Alumine - - -	32
Lime - - -	20
Oxyd of iron - -	2.50
	98.50

Zoifite was firft found in Carinthia, but has fince been difcovered in various parts of the continent of Europe, and at Glenelg in Invernefsfhire. It is nearly allied to tremolite, with which it was at firft arranged.

ZOITIUM, in *Ancient Geography*, a town of the Peloponnefus, in Arcadia; 15 ftadia from Tricolons. Steph. Byz.

ZOK, Sokor, in *Geography*. See Sokor *Zok*.

ZOKOL, a town of Servia; 16 miles S. of Sabatz.—Alfo, a town of Bofnia; 45 miles E. of Bofnaferai.

ZOL Engers. See Engers.

ZOLCA, in *Ancient Geography*, a town of Afia, in Galatia, which belonged to the Paphlagonians, and was fituated on the coaft of the Euxine fea. Ptol.

ZOLDO, in *Geography*, a town of Italy, in the Bellunefe; 18 miles N.W. of Belluno.

ZOLDORF, a town of Bohemia, in the circle of Boleflaw; 6 miles W.N.W. of Jung Buntzel.

ZOLERI, a town of the county of Tyrol; 8 miles S.S.E. of Trent.

ZOL-HUYS. See Tol-huys.

ZOLLERN, a caftle of Germany, fituated on a mountain, in the principality of Hohenzollern, to which it gives name; 10 miles S. of Tubingen.

ZOLLICKOFEN, a town of Switzerland, and principal place of a diftrict, in the canton of Berne; 2 miles N.W. of Berne.

ZOLNOK, a town of Hungary, on the river Theyffe; 48 miles W.S.W. of Debriczin.

ZOLOGEV, a town of Ruffia, in the government of Charcov; 24 miles N.N.W. of Charcov. N. lat. 50° 20′. E. long. 35° 44′.

ZOLOTITZA, a town of Ruffia, in the government of Archangel, on the eaft coaft of the White fea; 60 miles N. of Archangel.

ZOLOTONOSCHA, a town of Ruffia, in the government of Kiev; 72 miles S.S.E. of Kiev. N. lat. 49° 30′. E. long. 31° 58′.—Alfo, a river of Ruffia, which runs into the Dnieper, near Zolotonofcha, in the government of Kiev.

ZOLOTTA, or Szelotta, a filver coin of Turkey, containing 30 paras, the para being = 3 afpers.

ZOMBA, in *Geography*, a town of Africa, in the kingdom of Congo; 70 miles E. of St. Salvador.

ZOMBAR, a town of Hungary; 40 miles S. of Colocfa. N. lat. 45° 56′. E. long. 19° 12′.

ZOMERAW, a town of Pruffia, in Oberland; 12 miles N.E. of Bifchofswerder.

ZOMUCHANA, in *Ancient Geography*, a town of Afia, in Aria. Ptol.

ZONA, or *Zona Uxoris Regiæ*, a very fertile country of Perfia. It was fo called becaufe its revenue was deftined for the accommodation of the queen. Plato.

Zona, a word ufed by fome authors for that fpecies of of herpes, which others call the *zinzilla*, and we term the *shingles*.

ZONCHIO, in *Geography*, a cape of European Turkey, on the coast of the Morea; 12 miles N.N.W. of Navarin. N. lat. 37° 12′. E. long. 21° 30′.

ZONCHIO, a sea-port town of European Turkey, in the Morea: the harbour is large, but not commodious; 8 miles N. of Navarin.

ZONCOLCUCAN, a mountain of Mexico, in the province of Guaxaca.

ZONDAGS, a river of Africa, which runs into the Indian sea, N. lat. 31° 20′. E. long. 29°.

ZONDORO, a town of Hungary; 26 miles S.W. of Caschau.

ZONE, ZONA, ζωνη, q. d. *belt, girdle*, in *Geography* and *Astronomy*, a division of the terraqueous globe, with respect to the different degrees of heat found in the different parts of it; formed by the two tropics and two polar circles, which divide the surface of the earth into five parts.

The zones are denominated *torrid, frigid*, and *temperate*.

ZONE, *Torrid*, is a fascia, or band, surrounding the terraqueous globe, and terminated by the two tropics.

Its breadth, therefore, is 46° 56′. The equator running through the middle of it, divides it into two equal parts, each containing 23° 28′.

The ancients imagined the torrid zone uninhabitable.

ZONES, *Temperate*, are two fasciæ, or bands, environing the globe, and contained between the tropics and the polar circles. The breadth of each is 43° 4′.

ZONES, *Frigid*, are segments of the surface of the earth, terminated, the one by the antarctic, and the other by the arctic circle; or included between these circles and the poles. The breadth of each is 46° 56′.

The difference of zones is attended with a great diversity of phenomena.

1. In the torrid zone, the sun passes through the zenith twice a year; and his recess from the equator towards the pole, which is above the horizon, is twice a year equal to the height of the pole.

2. In the temperate and frigid zones, the least height of the pole exceeds the greatest distance of the sun from the equator; and therefore, to the inhabitants of it, the sun never passes through the zenith; yet if, on the same day, the sun rises, at the same time, to a greater height, the height of the pole is the less, since the inclination of the circles of diurnal revolution to the horizon is less.

3. In the temperate and torrid zones, the sun rises and sets every natural day, because the distance of the sun from the pole always exceeds the height of the pole; yet every where but under the equator, the artificial days are unequal, and the inequality is the greater as the place is less distant from the frigid zone.

4. Where the temperate zones terminate on the frigid, the height of the pole is equal to the sun's distance from the pole, when in the neighbouring tropic; and consequently, once a year, the sun, in its diurnal motion, performs an entire revolution, without going down under the horizon.

5. Every where, in a frigid zone, the height of the pole is greater than the least distance of the sun from the pole; and therefore, during some revolutions of the earth, the sun is at a distance from the pole less than the pole's height; and, during all that time, does not set, nor so much as touch the horizon. Where the distance from the pole, as the sun recedes from it, exceeds the height of the pole, or latitude of the place, the sun rises or sets every natural day.

ZONE, *Cingulum*, or girdle, part of the ecclesiastical dress of the Roman Catholic ministers. The use of it being derived from the church of Rome, it was called *zona Romana*.

ZONE, *Ciliary*, in *Anatomy*, the black impression of the ciliary processes on the vitreus humour. See EYE.

ZONE, *Greater and Smaller, of the Iris*, arterial circles produced by the anastomoses of the arteries. See EYE.

ZONGHAN, in *Geography*, a town of Cochinchina, near the sea. N. lat. 14° 30′. E. long. 108° 48′.

ZONGO, or MORENA, a river of Africa, which runs into the Atlantic, near Old Benguela.

ZONITES, in the *Materia Medica of the Ancients*, a name given to a kind of tutty, called also *placitis*. It had the latter name from the Greek πλακος, *a crust*, it being formed by way of crust on the sides of the furnaces. The latter name *zonites* was given from its being formed of several coats, which, when broken transversely, had the appearance of belts or zones. See TSAPHARI, and TUMEX.

ZONITIS CADMIA, a name given by some authors to a kind of *cadmia fornacum*, from its usually surrounding the upper parts of the furnaces like a girdle or belt.

ZONITIS, in *Entomology*, a genus of the *coleoptera* order of insects, the characters of which are, that the antennæ are setaceous; the palpi four and filiform, and shorter than the whole jaw; and the lip emarginated. There are two species; *viz.*

CHRYSOMELANA. Yellow, the wing-sheaths having a point in the middle, and the apex black: found in Egypt and the East.

FLAVA. Reddish, with wing-sheaths yellow, and black at the apex.

ZONNAR, a kind of belt, or girdle, of black leather, which the Christians and Jews of the Levant, particularly those of Asia, and the territories of the grand signior, are obliged to wear, to distinguish themselves from the Mahometans.

The word is corrupted from the vulgar Greek; a contraction of ζωναριον, or ζωνη, *girdle*.

It was Motavakkel X. kaliph, of the family of the Abassides, that first enjoined the Christians, &c. to wear the zonnar.

The ordinance to this effect was published in the year of the Hegira 235.

Hence, as most of the Christians of Syria, Mesopotamia, &c. are either Nestorians or Jacobites, those sectaries are often called *Christians of the girdle*.

ZONOSBIO, in *Geography*, an Indian town, belonging to the Seneca tribe; 2 miles N. of lake Seneca.

ZONS, a town of France, in the department of the Roer, situated on the Rhine, with a castle: at this place a river-toll is paid; 13 miles N.N.W. of Cologn. N. lat. 51° 4′. E. long. 6° 43′.

ZOOGRAPHY, formed of ζωον, *animal*, and γραφω, *I describe*, denotes a description of animals.

ZOOLATRIA, Ζωολατρια, composed of ζωον, *an animal*, and λατρια, *worship*, a species of idolatry, in which divine worship was offered to animals.

ZOOLOGIA, ZOOLOGY, Ζωολογια, compounded of ζωη, *life*, or ζωον, *animal*, and λογος, *speech, discourse*, a discourse or treatise upon animals, or living creatures.

Zoology makes a considerable article in natural history, comprehending what relates to the form, structure, method of living, feeding, propagating, &c. of the divers species

ſpecies of brute creatures, and the deſcriptions of every kind. This makes one of the three kingdoms, as they are called, of natural hiſtory; the vegetable and the mineral being the two others: in theſe, however, there is this difference made by writers, that while vegetables and minerals are treated of together, as all of a piece in each, the ſubjects of zoology are divided, and it is made to compoſe, as it were, ſeveral kingdoms. Whoever is to write on plants and minerals, calls his work a treatiſe of botany, or mineralogy; and we have no words to expreſs any ſubdiviſion of them into kingdoms; but in zoology, we treat, as different ſubjects, the different parts of it; and the hiſtory of birds is ſeparated by ſome from the reſt under the name of *ornithology;* that of quadrupeds, under the name of *tetrapodology;* and we have for the reſt, the words *entomology*, *amphibiology*, and the like, expreſſing thoſe things which are properly but the parts of zoology, as ſo many diſtinct and ſeparate ſtudies.

This may eaſily be amended by our conſidering the animal world as we do the vegetable and mineral, and dividing it, as we do the others, into its proper families; it will then be found that theſe are no better diſtinctions than thoſe of the families of theſe things, and that the authors may as well ſet up ſeparate ſtudies under the names of *bulbology*, *umbelliferology*, and the like, as thoſe.

A natural diviſion of the ſubjects of zoology, on this principle, will afford ſix ſeveral families of its ſubjects. 1. The hairy quadrupeds. 2. The birds. 3. The amphibious animals, ſuch as ſerpents, lizards, frogs, and tortoiſes. 4. The fiſhes. 5. The inſects. And, 6. Thoſe loweſt order of animated beings, the zoophytes. Artedi's Ichthyol. See Quadruped, Bird, Fish, &c.

ZOOMBO, in *Geography*, a town on the weſt coaſt of Celebes. S. lat. 3°. E. long. 119° 10′.

ZOOMINERALIA, a word uſed by ſome writers to expreſs certain ſubſtances which are of animal origin, yet have ſomewhat of the nature of ſtones, as pearls.

ZOOPHORIC Column. See Column.

ZOOPHORUS, or Zophorus, in the *Ancient Architecture*, the ſame thing with the *freeze* in the modern.

It was thus called in Greek, becauſe anciently adorned with the figures of animals: from ζωον, *animal*, and φερω, *I bear.*

The Greeks ſometimes alſo call the *zodiac* zoophorus, becauſe of the ſigns and conſtellations in it.

ZOOPHTHALMUS, in *Botany*, a name given by the ancient Greeks to the *ſedum majus*, or common great houſeleek.

It had this name from the Greek ζωον, *an animal*, and οφθαλμος, *an eye*, as expreſſing a reſemblance to the eyes of large animals, in the round and radiated growth of its cluſters of leaves. They alſo called it *ambroſia.*

ZOOPHYTON, Zoophyte, Ζωοφυτον, compounded of ζωον, *animal*, and φυτον, *plant*, q. d. *plant-animal*, in *Natural Hiſtory*, a kind of intermediate body, ſuppoſed to partake both of the nature of an animal and a vegetable.

In the Linnæan ſyſtem, the zoophytes, which conſtitute the fifth order of worms, (ſee Vermes,) are compoſite animals, reſembling a flower, and ſpringing from a vegetating ſtem. This order contains 15 genera, as the Tubipora, Madrepora, Millepora, Cellepora, Isis, Antipathes, Gorgonia, Alcyonium, Spongia, Flustra, Tubularia, Corallina, Sertularia, Pennatula, and Hydra: ſee each reſpectively. The ſpecies enumerated and deſcribed in Gmelin's Linnæan ſyſtem are 489.

The fœtus, while in the womb, appears to many to be a real zoophyte, growing to the mother by the funiculus umbilicalis, as plants do to the earth by their ſtem. See Fœtus, and Embryo.

Concerning the zoophyte called *borametz*, ſee Agnus *Scythicus.*

Zoophyte-*Marygold.* See Marygold.

Zoophytes, *Chemical Compoſition of.* See Shells and Vermes.

ZOOTOMY, Ζωοτομη, compounded of ζωον, *animal*, and τεμνω, *I cut*, the art, or act, of diſſecting animals, or living creatures.

Zootomy amounts to the ſame with anatomy, or rather comparative anatomy. See Anatomy.

ZOPARITUS, in *Ancient Geography*, a town of Aſia, in Melitene, on this ſide of the Euphrates. Ptol.

ZOPH, in *Geography*, a town of Syria; 25 miles S.S.E. of Jeruſalem.

Zoph, a diſtrict in the N. part of the government of Diarbekir.

ZOPHA, a town of Pruſſia, in Pomerelia; 10 miles S.W. of Marienburg.

ZOPHOCIDELUS, in *Botany*, a word uſed ſometimes as an epithet with the word *chamæleon*, and ſometimes ſingly as the name of a plant, in both caſes expreſſing the black chamæleon-thiſtle, which the ancients carefully diſtinguiſhed in their writings from the white kind; the former being a poiſonous plant, the other not ſo.

ZOPHORIC. See Zoophoric.

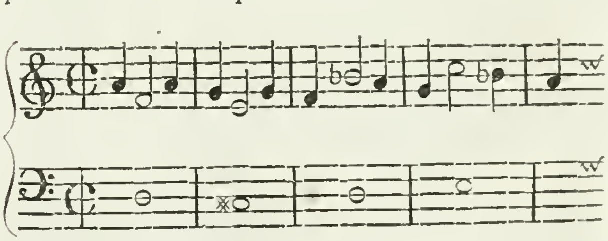
ZOPHORUS. See Zoophorus.

ZOPISSA, Ζωπισσα, *naval pitch*, a kind of mixture of pitch and tar, ſcraped off from the ſhips that have been a long time at ſea. See *Naval* Pitch.

The word ſeems formed from ζεω, *bullio, I boil*, and πισσα, *pitch;* q. d. *concocted pitch.*

This matter, by being gradually penetrated by the ſalt of the ſea, becomes impregnated with its qualities; and, being applied to the body externally, is found reſolutive and deſiccative.

ZOPPO, in the *Italian Muſic*, is applied to all thoſe counterpoints deſcribed under the article Obligato, &c. Thus they ſay, *contra-punto alla zoppa*, a lame or hopping counterpoint; becauſe, in theſe, a note is placed between two others, each of half its value in time. When this comes to be played or ſung, the voice or inſtrument ſeems to proceed by unequal leaps or ſteps, like thoſe of a lame perſon. See the example here annexed.



There are *contra punto alla zoppa ſopra il ſogetto*, as well as *ſotto il ſogetto*, *i. e.* above and below the ſubject. See Sogetto.

ZOPPOLA, in *Geography*, a town of Italy, in Friuli; 13 miles N.N.W. of Concordia.

ZOQUES, a diſtrict of Mexico, in the province of Chiapa, bordering on Tabaſco.

ZORABA, a word uſed by ſome of the chemical writers to expreſs vitriol.

ZORAH, in *Geography*, a town of Africa, on the coast of Barca. N. lat. 30° 45'. E. long. 18° 30'.

ZORAMBUS, in *Ancient Geography*, a river of Asia, in Carmania. Ptol.

ZORBIG, or Little Zerbst, in *Geography*, a town of Saxony, in the circle of Leipsic, with a citadel; 15 miles S. of Dessau. N. lat. 51° 40'. E. long. 12° 18'.

ZORECZA, a town of Lithuania; 80 miles E.S.E. of Pinsk.

ZORGE, a town of Saxony, belonging to the abbey of Walkenried; 6 miles N.E. of Walkenried.

Zorge, a river of Thuringia, which runs into the Helm, 5 miles W. of Nordhausen.

ZORIGA, in *Ancient Geography*, a town of Asia, in the Greater Armenia, to the left of the Euphrates, and at some distance from it. Ptol.

ZORILLE, in *Zoology*, a species of weasel, having the back and sides marked with short stripes of black and white, the last tinged with yellow; the tail long and bushy, partly white, and partly black; the legs and belly black. This animal inhabits Peru, and other parts of South America: its pestilential vapour overcomes even the panther of America, and stupefies that formidable enemy. Pennant. See Viverra.

ZORITA, in *Geography*, a town of Spain, in New Castile; 12 miles N.W. of Huete.

ZORLESCA, a town of Italy; 8 miles S.S.E. of Lodi.

ZORN, a river of France, which rises near Saverne, in the department of the Lower Rhine, passes by Brumath, and enters a canal which communicates with the Rhine, 8 miles N. of Strasburg.

ZORNDORF, a town of the New Mark of Brandenburg, where the king of Prussia defeated the Russians in the year 1758, near Custrin.

ZORNIA, in *Botany*, received that name from the late professor Gmelin of Gottingen, the compiler of a very faulty edition, at least as to the botanical department, of the *Systema Naturæ* of Linnæus. He chose this appellation for one of Walter's anonymous genera, which he himself knew nothing of. It has been adopted by Michaux and Pursh, and seems intended for the commemoration of Mr. John Zorn, an apothecary of Kempten, in Bavaria, who was born in the year 1739, and may possibly be still living. He has published five volumes in octavo of *Icones Plantarum Medicinalium*, each volume containing one hundred plates, with a Latin and German text. These figures are coloured in the Nuremberg stile; at which place the work appeared, between the years 1779 and 1784. There was, moreover, a Dr. Bartholomew Zorn of Berlin, who published there, in 1714, *Botanologia Medica*, a thick German quarto, with six plates. He edited also, in 1673, the *Herbarium portatile* of Thomas Pancorius, and according to Driandr. Bibl. Banks, v. 5. 496, died in 1717, at the age of 78.—Gmel. Syst. Nat. v. 2. 1096. Michaux Boreal.-Amer. v. 2. 76. Pursh 484. Poiret in Lamarck Dict. v. 8. 872. (Anonymos n. 279; Walt. Carol. 181.)—Class and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-shaped, two-lipped; upper lip broad, abrupt, emarginate; lower in three deep segments, the middle one longest. *Cor.* papilionaceous: standard inversely heart-shaped, reflexed, revolute at the sides: wings ovate, erect, smaller than the standard: keel divided at the base, bluntly rectangular, the length of the wings. *Stam.* Filaments in two sets? anthers five of them oblong, five alternate ones globose. *Pist.* Germen ovate; style awl-shaped, horizontal; stigma simple. *Peric.* Legume of several, roundish, compressed, single-seeded joints, hispid with barbed prickles, not bursting. *Seeds* solitary, kidney-shaped.

Eff. Ch. Calyx bell-shaped, two-lipped; the upper lip abrupt. Standard revolute. Keel angular. Five alternate anthers oblong; five globose. Legume of several single-seeded, closed, hispid joints.

Obs. The habit of this genus is so peculiar, and so unlike Hedysarum, much more resembling Stylosanthes, (see those articles,) that we are very glad of any characters that may serve to keep it distinct, and we hope the above may suffice. The plants are herbaceous, with one or two pair of conjugate *leaves*, without an odd one. *Flowers* small, in axillary *spikes*, with large leafy *bracteas*. The species have not yet been well discriminated. We shall endeavour to explain them, with the help of original specimens.

1. Z. *angustifolia*. Narrow-leaved Zornia. (Hedysarum diphyllum α; Linn. Sp. Pl. 1053. Willd. Sp. Pl. v. 3. 1178. Lamarck Dict. v. 6. 404, excluding the variety H. n. 291; Linn. Zeyl. 134, excluding Sloane's synonym, and the variety β. H. bifolium, siliquis articulatis echinatis; Burm. Zeyl. 114. Onobrychis maderaspatana diphyllos minor, siliculis hirsutis; Pluk. Phyt. t. 246. f. 6. "Nelam-mari; Rheede Hort. Malab. v. 9. 161. t. 82." Raii Hist. v. 3. 404.)—Leaflets two, lanceolate, uniform. Bracteas ovate, ribbed, fringed, imperfectly reticulated, shorter than the legume, marked with glandular dots. Prickles of the legume rough.—Native of the East Indies, in a sandy soil. *Root* annual, tapering, warty. *Stems* several, diffuse, from four or five inches to a foot long, round, slender, zigzag, smooth, leafy, with short alternate branches. *Leaves* simply conjugate, alternate; *leaflets* from half an inch to an inch long, elliptic-lanceolate, entire, bluntish, tipped with a small point, unequal at the base, smooth on both sides, not quite sessile at the extremity of the common *footstalk*, which is about the length of the leaflets, cylindrical, smooth, with a longitudinal furrow above. *Stipulas* half-arrowshaped, ribbed, entire, pointed at each end. *Flowers* yellow, in axillary, solitary, stalked, lax, bracteated *spikes*, longer than the leaves, each spike of from three to eight alternate flowers. *Bracteas* one pair to every flower, twice as long, two-ranked, converging, flat, ovate, acute, entire, strongly fringed, three or five-ribbed, besprinkled with resinous dots, elongated at the base into a short oblique spur, permanent, their surface smooth. *Legume* near an inch in length, longer than the bracteas, of about four semi-orbicular joints, finely reticulated, and beset with spreading, brown, barbed prickles, which are rough with minute reversed hairs, but we cannot perceive that the surface of the legume itself is downy, at least not invariably. The resinous dots scattered over the *bracteas* seem peculiar to this species. Those parts are full as much fringed in this as in the *H. conjugatum* of Willdenow, though his definitions indicate otherwise.

2. Z. *reticulata*. Reticulated Zornia. (Hedysarum diphyllum β; Willd. Sp. Pl. v. 3. 1178. δ; Lamarck Dict. v. 6. 404. H. diphyllum; Swartz Obs. 285. H. n. 10; Browne Jam. 301, excluding the synonyms. H. minus diphyllum, flore luteo; Sloane Jam. v. 1. 185.)—Leaflets two, lanceolate; the lower ones elliptical. Bracteas ovate, as long as the legume, strongly reticulated and fringed, without glandular dots. Legume and its prickles downy.—Native of the dry sandy parts of the savannahs of Jamaica. Our specimens are from Browne himself. The *root*, though said to be annual, is somewhat woody. *Herb* larger than the last, and most unquestionably specifically distinct. The *stems* are straight, a foot long, scarcely branched. *Leaflets* an inch

inch or an inch and a quarter in length; thofe of the lower leaves half an inch broad. *Spikes* many-flowered, thrice as long as the leaves. *Flowers* yellow; the ftandard fometimes purplifh. The *bracteas* afford a clear fpecific diftinction, in their ftrongly-marked, elevated, veiny reticulations, and the total want of refinous or glandular dots, though their whole furface is minutely granulated, as it were, like thofe of the foregoing fpecies. The *legumes* have three or four joints, and their furface, as well as their prickles, is downy. They are almoft entirely covered by the *bracteas*.

3. Z. *conjugata*. Ovate Zornia. (Hedyfarum conjugatum; Willd. Sp. Pl. v. 3. 1178. H. diphyllum β; Linn. Sp. Pl. 1053. H. n. 291, β; Linn. Zeyl. 135. H. bifolium, foliolis ovatis, filiculis afperis, geminis, inarticulatis; Burm. Zeyl. 114. t. 50. f. 1. Onobrychis maderafpatana diphyllos, filiculis afperis; Pluk. Phyt. t. 102. f. 1.)—Leaflets two, ovate, uniform. Bracteas ovate, ribbed, fringed, imperfectly reticulated, fhorter than the legume, without glandular dots. Legume fringed; its difk and prickles fmooth.—Native of Ceylon and Tranquebar. This fpecies approaches the laft in fize, but differs in many effential points. The *leaflets* are ovate, not near fo long as their common *footftalk*. *Bracteas* more pointed and elongated at the bafe, ribbed, but not ftrongly reticulated; their fubftance quite deftitute of pellucid dots, though fome of them occafionally bear little black opaque prominences, which feem the effect of injury, or are perhaps a minute parafitical fungus. *Legumes* confiderably longer than the bracteas, though each confifts of fcarcely more than two orbicular joints, full twice the fize of either of the preceding fpecies, from which they differ in the fmoothnefs of their difk and prickles, though fringed at the edge. The *flowers* are yellow.

4. Z. *latifolia*. Broad-leaved Zornia. (Hedyfarum diphyllum; Aubl. Guian. 774, excluding all the fynonyms.)—Leaflets two, roundifh-ovate; the lower ones orbicular. Bracteas linear-lanceolate, ribbed, fomewhat hairy, longer than the downy legumes.—Gathered in Guiana by Aublet, from whom we have fpecimens, which abundantly fhew his plant to be different from any of the foregoing, and juftify him in faying that, with refpect to it at leaft, Plukenet's figures are bad. This has a woody, but perhaps annual, *root*, and feveral proftrate *ftems*, from fix inches to a foot long, ftraight, round, downy. *Footftalks* alfo downy, rather longer than the *leaflets*, which in the lower *leaves* are about half an inch in length, nearly orbicular, obtufe; in the upper gradually more elongated, ovate, or ovato-lanceolate, acute; all of them fomewhat hairy or filky, efpecially beneath, where alfo they are a little glaucous. The narrow *bracteas*, very differently fhaped from any of the three preceding fpecies, are the diftinguifhing characteriftic of this: they have three very ftrong crowded ribs, originating from their point of infertion, below which is a blunt elongation downwards, moft like that of *Z. reticulata;* they are fomewhat hairy, as well as flightly fringed. *Corolla* yellow. *Legume* of only two joints, unlefs any have been broken off, which is not apparent; the prickles downy, and the difk quite woolly. Willdenow fpeaks of a fuppofed variety of *Hedyfarum diphyllum* from Portoricco, which is larger than the common kind, and whofe *leaves* are "*ftrigofe beneath;*" by which expreffion is probably meant briftly, or hairy. This, if not our *Zornia latifolia*, muft be a hitherto nondefcript fpecies, of which we have not materials to give a definition.

5. Z. *heterophylla*. Various-leaved Zornia. (Hedyfarum tetraphyllum; Thunb. Act. Nov. Upfal. v. 6. 44. t. 3. Prodr. 132. Willd. Sp. Pl. v. 3. 1203. Lamarck Dict. v. 6. 405, variety δ.)—Leaflets three or four, lanceolate. Stipulas half-arrowfhaped. Bafe of the bracteas elongated and acute.—Gathered by Thunberg in the interior part of the country, above the Cape of Good Hope, near Galgebofch, flowering in November and December. The *ftem* is herbaceous, decumbent, thread-fhaped, fmooth, a foot or more in length. *Footftalks* rather longer than the *leaflets*, which are three or four together, elliptic-lanceolate, acute, entire, hardly an inch long. *Stipulas* much elongated at the bafe, acute at each end. *Spikes* axillary, many times longer than the leaves, (at leaft the lower fpikes,) and confifting of ten or twelve *flowers*, concealed by the ovate three-ribbed *bracteas*, each of which is elongated at the bafe into an ovate acute appendage, nearly half its own length. *Legume* longer than the bracteas, of four joints, faid by Thunberg to be rough, but in what manner, or degree, is not mentioned: his figure reprefents them fmooth and globofe, which is evidently an inaccuracy.

6. Z. *tetraphylla*. Four-leaved Zornia. Michaux Boreal.-Amer. v. 2. 76. t. 41. Purfh n. 1. (Z. bracteata; Gmel. n. 1. Anonymos bracteata; Walt. Carol. 181. Hedyfarum tetraphyllum; Lamarck Dict. v. 6. 405, α.)—Leaflets four, lanceolate. Stipulas ovate. Bafe of the bracteas fomewhat elongated, obtufe.—Native of fandy fields in Lower Carolina. Perennial, flowering in July and Auguft. About a foot high, much branched. *Flowers* yellow. *Purfh*. We have here ventured to diftinguifh this from the laft-defcribed fpecies, by the characters afforded in the plates cited, without our having ever feen a fpecimen of either. We are fully aware of the hazard of fuch a proceeding; but as it is highly probable that a Cape plant will hardly prove, on comparifon, the fame fpecies as a Carolina one; and the fpecies of this genus very nearly refemble each other, and have been much confounded, we propofe the above characters. If the figure of Michaux be exact, as to the *ftipulas* and *bracteas*, there can be no doubt on the fubject, and it was drawn by no lefs an artift than Redonté. The *ftipulas* are there reprefented perfectly ovate, without any fpur, or elongation, at the bafe, and not half the ufual fize in this genus. Thofe of Thunberg's plate are like the reft of the fpecies. This is the moft important difference, though the fhort and blunt fpur of the *bracteas* is very ftriking alfo. The *flowers* feem larger in thefe two laft, than in any of the foregoing.

On reviewing the whole genus, we cannot but repeat that the abruptly-compounded *leaves* afford a moft important mark of difference, compared with *Hedyfarum*, nor are the yellow *flowers*, in this cafe, entirely unworthy of confideration. There is moreover fo clofe a refemblance between all the fpecies of *Zornia*, as to induce a perfuafion of their conftituting a very natural genus. The fame may be faid of Stylosanthes, to which we have already referred the reader as being next akin to *Zornia*.

Which of the above fix fpecies, or rather which of the firft four, is entitled to a place in the *Hortus Kewenfis*, we cannot prefume to determine. In v. 4. 340. of that work, Dr. Houftoun is recorded as having fent to Miller, before the year 1733, fomething which has always paffed for *Hedyfarum diphyllum*. This muft have come from South America, or the Weft Indies, and was therefore not *Nelam-mari* of Rheede, our *Zornia anguftifolia;* nor the *conjugata*, a plant of Ceylon. It muft have been either the Weft Indian *reticulata*, or more probably perhaps the South American *latifolia*.

ZOROANDA, Hazour, in *Ancient Geography*, a place of of Asia, on a part of mount Taurus, called Nicephates, where the Tigris opened a subterranean passage, N.W. of Amida.

ZOROASTER, Zerdusht, or Zardusht, in *Biography*, an eminent Eastern philosopher, concerning whom, as well as the age in which he lived, learned writers have entertained very different opinions. Some have ascribed this title, the derivation of which is uncertain, to many eminent persons; whilst others have maintained that there was but one Zoroaster, and that he was a Persian. Others have said that there were six celebrated founders of philosophy of this name. Ham, the son of Noah, Moses, Osiris, Mithras, and others, both gods and men, have by different writers been asserted to have been the same with Zoroaster. Many different opinions have been also advanced concerning the time in which he flourished. Aristotle and Pliny fix his date at so remote a period as 6000 years before the death of Plato: Hermippus says, that he lived 5000 years before the Trojan war; but these are idle tales, which should, without doubt, be classed with the report of the Chaldæans, concerning the antiquity of their astronomical observations. According to Laertius, he flourished 600 years before the Trojan war; according to Suidas 500. We shall in the sequel of this article detail the opinions of some of our principal modern writers on this subject. According to Brucker, the most probable hypothesis is, that there was a Zoroaster, a Perso-Median, who flourished about the time of Darius Hystaspes, and that besides him there was another Zoroaster, who lived in a much more remote period among the Babylonians, and taught them astronomy. The Greeks and Arabians are agreed concerning the existence of the Persian Zoroaster; and the ancients unanimously ascribe to a philosopher, whom they call Zoroaster, the origin of the Chaldæan astronomy, which is certainly of much earlier date than the time of Hystaspes; so that it seems necessary to suppose a Chaldæan Zoroaster distinct from the Persian. Concerning this Zoroaster, however, nothing more is known, than that he flourished towards the beginning of the Babylonish empire, and was the father of the Chaldæan astrology and magic. (See Chaldæan *Philosophy* and Magi.) All the writings which have been ascribed to the Chaldæan Zoroaster are unquestionably spurious. The Persian Zoroaster was probably of Persian extraction, and born in Media. Although much of what has been related concerning this Zoroaster or Zerdusht, and the instruction which he received from the Jews, is fabulous; nevertheless it is not improbable that he might have learned some things from the Israelites who resided in Babylon, that might enable him to correct the doctrine of the Persian magi; but it is not easy to specify particulars. Several miracles are ascribed to Zoroaster, but they are of such a kind as an impostor would not find it very difficult to perform. (See Magi.) To Zerdusht, or the Persian Zoroaster, many writings are ascribed; particularly the Zend. (See Zendavesta.) Fragments of a work, entitled "The Oracles of Zoroaster," are still extant. Several editions of them under the form of verses have been published, and pains have been taken to explain them. Stanley has subjoined to his "Lives of the Philosophers" a correct translation of them. The philosophers of the Alexandrian school highly venerate them as genuine remains of Chaldæan wisdom: but they have so many evidences in their ideas and language of their origin in that school, as to render it probable that they were written by some Platonist, about the beginning of the second century; a period in which spurious writings were produced in order to support the sinking credit of Gentile philosophy.

The learned Dr. Hyde, and after him Dr. Prideaux and several others, are of opinion, that Zoroaster was the same with the Zerdusht of the Persians, who was a great patriarch of the Magians, and that he lived between the beginning of the reign of Cyrus, and the latter end of that of Darius Hystaspes.

Dr. Warburton (Legation, vol. ii. part i. p. 8.) censures Hyde and Prideaux for making an early Bactrian law-giver to be a late Persian false prophet, and says this whole story of him is mere fable, contradicting all learned antiquity, and supported only by the romantic relations of later Persian writers under the caliphs.

Dr. Baumgarten likewise (Anc. Un. Hist. Suppl. vol. ii. p. 365, &c.) represents it as doubtful, whether the Persian Zoroaster ever existed, calls in question the credibility of the oriental writers who give his history, and makes the whole to be a forgery in later times by the fire-worshippers of Persia.

The learned Mr. Bryant (Anal. Anc. Mythol. vol. ii. p. 107.) observes, that there are more persons than one spoken of under the character of Zoroaster; though there was one principal to whom it more truly related. Of men, styled Zoroaster, he says, the first was a deified personage, reverenced by some of his posterity, whose worship was called Magia, and the professors of it Magi. This worship was transmitted from the ancient Babylonians and Chaldæans to the Persians, who, succeeding to the sovereignty of Asia, renewed under their princes, and particularly under Darius, the son of Hystaspes, those rites which had been in a great degree effaced and forgotten. The Persians, says this learned writer, originally derived their name from the deity Perez, or Parez, the sun; whom they also worshipped under the title of Zor-After. On occasion of the distress to which they were reduced upon the death of their last king Yesdegerd, they retired into Gedrosia and India, where people of the same family had for ages resided, and carried with them some shattered memorials of their religion in writing, whence the Sadder, Shaster, Vedam, and Zendavesta, were compiled; and upon these the religion of the Brahmins and Persees is founded. The person who is supposed to have first formed a code of institutes for this people is said to have been one of the Magi, named Zerdusht; the same, as Hyde and others suppose, both in character and name, with Zoroaster: but Mr. Bryant discovers no resemblance between them. There were, indeed, many persons of this name in different parts of the world, who were magi or priests, and denominated from the rites of Zoroaster, which they followed. We read of an Assyrian, Medo-Persian, Proconnesian, Bactrian, Pamphylian, Chinese, &c. Zoroaster, supposed by Dr. Hyde to have been one and the same. But Mr. Bryant thinks that their respective histories furnish evidence sufficient of their being different persons; and besides, there seems to have been one person more ancient and celebrated than the rest. As for the Zoroaster or Zerdusht of Hyde, he lived in the reign of Darius, the father of Xerxes, about the time of the battle of Marathon, and consequently not a century before the birth of Eudoxus, Xenophon, and Plato. This Zerdusht, who was the renewer of the Sabian rites, could not be the person so much celebrated by the ancients, and referred to the first ages. Xanthus Lydius makes him above 600 years prior to the reign of Darius; Suidas places him 500 years before the war of Troy; Hermodorus Platonicus, Hermippus, and Plutarch, refer him to 5000 years before that era; Eudoxus supposed him to have flourished 6000 years before the death of Plato; and Pliny places him

many

many thousand years before Moses. Upon the whole it appears, that no memorial upon record is placed so high as the ancient writers have carried this personage; and though their accounts are for the most part exaggerated, yet they fully ascertain the antiquity of this person.

The title Zoroaster, Mr. Bryant conceives, originally belonged to the sun, and was metaphorically bestowed on sacred and enlightened personages. Some have thought, that the first among men to whom this title was applied was Ham; others have taken him for Chus, for Mizraim, and for Nimrod, and Huetius for Moses. But Mr. Bryant, after examining the primitive characters given of him by different writers, supposes, that they concur only in Noah, who was the first deified mortal, and the prototype in the Magian worship. This writer supposes, that, as the object of the Persic and Chaldaic worship was the sun, and most of their titles were derived thence, Zoroaster denoted Sol Asterius; Zor being the sun, and Aster signifying star.

The abbé Foucher, in a long series of memoirs, inserted in the 25th, 26th, 27th, 28th, 30th, and 31st vols. of the Histoire de l'Academie Royale des Inscriptions et Belles Lettres, &c. Paris, has given an ample account of the religion of the Persians. This learned author maintains, on the authority of Pliny, that the most celebrated Zoroaster was an ancient sage, who lived under Cyaxares, king of the Medes, restored the worship of fire, was revered by the Persians as a celestial prophet, and whose extacies, prodigies, and revelations, made a great noise in the world. See Zendavesta.

ZOROPASSUS, in *Ancient Geography*, a town of Asia, in Lesser Armenia, dependent on the prefecture of Murianne. Ptol.

ZORVI, in *Geography*, a town of Asiatic Turkey, in the province of Diarbekir; 22 miles E. of Ana.

ZOSAWA, a river of Moravia, which runs into the Frisawa, 5 miles W. of Hohenstadt.

ZOSIMA, in *Botany*, an umbelliferous genus, thus called by professor Hoffmann, in compliment to three brothers, Anastatius, Nicholas, and Zoa Zosima, distinguished for their editions of numerous works of the Greek classics. This botanical commemoration seems chiefly owing to the great propensity, ("*magna propensio*,") of the latter of these brothers, for natural history. We presume not to dispute the claim, because the author of this name is, doubtless, better able to judge of its propriety than we can possibly be.—Hoffm. Umbell. v. 1. 145. t. 1. B. f. 9.—Class and order, *Pentandria Digynia*. Nat. Ord. *Umbelliferæ*.

Gen. Ch. *General* and *partial Umbel* of many unequal rays. *General* and *partial involucrum* of many, linear-lanceolate, acute, unequal, villous, permanent leaves. *Perianth* of five unequal, very short, permanent teeth. *Cor. Universal* nearly regular and uniform; *flowers* partly perfect and fertile; the central and lateral ones, in each umbel, male: *partial* of five, nearly equal, spreading, inversely heart-shaped, deflexed petals; rather concave, on each side, at the keel; tapering at the base; obliquely inflexed at the point, which is linear-lanceolate, acute, involute, channelled. *Stam.* Filaments five, spreading or deflexed, straight, longer than the involute corolla, dilated at the base; anthers versatile, roundish, two-lobed. *Pist.* in the perfect florets, Germen inferior, ovate, compressed, villous; styles two, thread-shaped, channelled; their tumid base wavy and crenate at the margin; at length reflexed and permanent; stigmas simple, obtuse. *Peric.* Fruit roundish-obovate, compressed, finely downy, bordered; the border externally tumid, and somewhat corrugated, internally striated; emarginate at the summit, crowned with the styles on their short, nearly sessile, crisped base; thickened at the bottom; the disk elevated and striated. *Seeds* two, of a similar shape, convex in the middle, with three elevated, narrow, central ribs, and two marginal ones; their interstices, in the upper half, occupied by four coloured stripes.

Eff. Ch. General and partial involucrum of many permanent leaves. Corolla uniform. Some flowers male. Calyx tumid, five-toothed. Petals nearly equal, obovate, inflexed. Fruit roundish-obovate, compressed, villous, with a *corrugated* border; the disk ribbed.

1. Z. *orientalis*. Oriental Zosima. Hoffm. n. 1. (Heracleum absinthifolium; Venten. Choix de Pl. 7. t. 7. Marsch. a Bieberst. Taur.-Caucas. v. 1. 224. Sphondylium orientale humilius, foliis absinthii; Tourn. Cor. 22.)—Native of Persia, Georgia, and other countries about Caucasus, flowering in the early part of summer. The *root* is biennial, tap-shaped, milky. The whole herb when bruised smells like Smallage, *Apium graveolens*. *Stem* erect, near two feet high, cylindrical, furrowed, somewhat branched, and slightly leafy, about as thick as a swan's quill, rough to the touch with short whitish hairs. *Leaves* opposite, stalked, thrice pinnate, hoary with short pubescence; *leaflets* small, wedge-shaped, lobed; entire at the edges. *Umbels* two or three inches in diameter, on long stalks, terminal: *partial* ones of from twelve to fifteen *flowers*, which, according to Ventenat, are milk-white, but Hoffmann describes the *petals* of a yellowish-green. *Germen* downy. If the *flowers* are really white, we should suspect this plant to be nearly related to *Heracleum tomentosum*, Sm. Prodr. Fl. Græc. Sibth. v. 1. 192, which will be exhibited in t. 281. of the Fl. Græca; but the shape of the *fruit* of the latter is very unlike Hoffmann's figure, nor does it better agree with the representation in Ventenat's work. This last indeed is itself so unlike Hoffmann's t. 1. B. f. 9, (he himself erroneously cites f. 7,) that we cannot but suspect some mistake. Nor are we, after all, persuaded that the plant under consideration ought to form a separate genus from *Heracleum*. In so natural a family, the skill of a botanist is shewn in combining, rather than dividing, which last is the most easy thing in the world, and the most pernicious to science. We do not, however, pretend to decide in the present case; because the generic distinctions of Umbellate plants are still *sub judice*.

ZOSIMUS, in *Biography*, a Greek historian, who held various civil offices under the younger Theodosius, about the commencement of the fifth century, and left a history of Roman affairs in six books; the first of which furnishes a slight view of the emperors, from Augustus to Diocletian; and the others detail the public events that occurred to the second siege of Rome by Alaric, and the pontificate and deposition of Attalus. Something seems to be wanting towards the end. The style of this historian is concise, perspicuous, and pure; but his prejudices against the Christian emperors have misled him; and particularly in his account of Constantine the Great. Leunclavius has attempted to justify him; and it has been allowed that he has divulged some truths which other historians have suppressed. Gibbon says, "credulous and partial as he is, we must take our leave of this historian with regret." The first edition of his work was that of R. Stephens, in 1581; others have been published by T. Smith, Gr. and Lat. Oxon. 1679, 8vo.; and the Variorum by Cellarius, 8vo. 1679, 1712.

Zosimus, *Pope*, a native of Greece, was elevated to the pontifical throne in March 417, as successor to Innocent I.; at the time when the Pelagian controversy prevailed. Cælestius, the chief disciple of Pelagius, presented his confession of faith to this pope, who approved it and admitted him

him to his communion. That of Pelagius was likewife approved. The African bifhops, however, who were hoftile to the Pelagian doctrine, interefted the emperor Honorius in their favour; and obtained from the pope an anathema of the doctrine of Pelagius and Cæleftius, with a fentence of excommunication if they refufed to abjure their tenets. A council was affembled, in which other bifhops, who concurred in the Pelagian creed, were degraded from their epifcopal dignity. The fluctuations and inconfiftencies of Zofimus's conduct depreciated the character of the pope, and furnifhed reafon for queftioning his infallibility. Other inftances occurred, in which he was hardly able to maintain his authority. This pope died in December 418, leaving the character of an able man of bufinefs, but hafty, tenacious, and imperious. His thirteen epiftles, that are extant, are written with fpirit and elegance. He was canonized, as Bower fays, by a miftake of cardinal Baronius, who fuppofed him to be a St. Zofimus in the martyrology of Bede. Dupin. Bower.

ZOSITERPUM, in *Ancient Geography*, a town of Thrace, in the province of Rhodope. Procopius.

ZOSSEN, in *Geography*, a town of Brandenburg, in the Middle Mark; 13 miles S.E. of Potzdam. N. lat. 52° 10'. E. long. 13° 17'.

ZOSTER, in *Ancient Geography*, a borough of Attica, upon the fea-coaft, with a promontory of the fame name, extended into the Saronic gulf; but it is not known to what tribe it belonged. Minerva, Apollo, Diana, and Latona, were honoured here. As Zofter bore fome refemblance to zone, or cincture, the inhabitants pretended that the borough bore this name, becaufe Latona, finding herfelf in this place, and feeling that her time was approaching, unloofened her cincture. Pauf. in Attic. c. 31.

Zoster, a word ufed by fome to exprefs that kind of herpes, called by others *zona* and *zingilla*, and by us ufually known under the name of the fhingles.

ZOSTERA, in *Botany*, fo named by Linnæus from ζωςηϱ, *a girdle*, alluding to the ribband-like appearance of its long linear foliage.—Linn. Gen. 472. Schreb. 615. Willd. Sp. Pl. v. 4. 179. Vahl Enum. v. 1. 14. Mart. Mill. Dict. v. 4. Sm. Fl. Brit. 7. Prodr. Fl. Græc. Sibth. v. 1. 2. Purfh 2. Brown Prodr. Nov. Holl. v. 1. 338. Juff. 24. Poiret in Lamarck Dict. v. 8. 872. Lamarck Illuftr. t. 737. Gærtn. t. 19. (Alga; Raii Syn. ed. 3. 52. Ruppia; Moehring in Phil. Tranf. v. 41. 217.)—Clafs and order, *Monandria Monogynia*, Fl. Brit. and Vahl. (Gynandria Polyandria, *Linn.* Monoecia Monandria, *Schreb.* and *Willd.*) Nat. Ord. *Piperitæ*, Linn. *Aroideæ*, Juff. *Aroideis affine*, Brown.

Gen. Ch. *Cal.* Spadix linear, flat, fheathed by the bafe of a leaf, bearing an indeterminate number of flowers on one fide. Perianth none. *Cor.* none. *Stam.* Filament none; anther feffile, erect, clofely preffed to the fpadix, fimple, cylindrical, a little wavy, tapering at each end. *Pift.* Germen folitary, parallel to the anther, and of nearly a fimilar fhape; ftyle one, obliquely curved, fhorter than the germens; ftigmas two, linear, acute, fpreading. *Peric.* Capfule pendulous, elliptical, membranous, of one cell, not burfting. *Seed* folitary, oblong, ftriated.

Eff. Ch. Spadix linear, fheathed by the bafe of a leaf, bearing the flowers on one fide. Perianth and Corolla none. Anther feffile. Stigmas two, linear. Capfule with one feed.

Obf. The above is the view of the genus in queftion, firft given by Gærtner, and confirmed from actual obfervation in the *Englifh Botany* and *Fl. Brit.* Vahl adopts the fame idea as ours of the place of this genus in the artificial fyftem. The *feed* has a large, oval, half divided *cotyledon*, as we would call it; Gærtner terms it a *vitellus*. (See the article Yolk *of the Seed*.) From this genus is to be feparated the *Z. oceanica* of Linnæus, which belongs to *Caulinia* of De Candolle and Brown; *Poffidonia* of Konig in Ann. of Bot. v. 2. 95. t. 6; *Kernera* of Willd. Sp. Pl. v. 4. 947; but which is different from Caulinia of Willdenow; fee that article.

1. Z. *marina*. Common Grafs-wrack. Linn. Sp. Pl. 1374. Willd. n. 1. Vahl n. 1. Fl. Brit. n. 1. Engl. Bot. t. 467. Fl. Dan. t. 15. Purfh n. 1. Brown n. 1? (Zoftera; Linn. It. W. Goth. 166. t. 4.)

β. Fucus marinus, feu Alga marina graminea mino; Raii Syn. 52. (Algoides; Mich. Ic. Ined. t. 60. f. 2.)

γ. Fucus, five Alga marina graminea anguftifolia feminifera ramofior; Raii Syn. 52. (Algoides; Mich. Ic. Ined. t. 59?)

δ. Potamogeiton marinum in utriculis epiphyllofpermon minus; Raii Syn. 53.

ε. Alga anguftifolia vitrariorum; Raii Syn. 53.

Leaves entire, obfcurely three-ribbed. Stem flightly compreffed. Native of the fea-fhore, or falt muddy ditches and creeks throughout Europe, poffibly of New Holland and North America alfo, flowering towards autumn. The *root* is perennial, fibrous. *Stems* roundifh, fmooth, decumbent at the bafe, and trailing to a great extent, throwing out tufts of fibres here and there; their branches floating and leafy, fimple, a little compreffed. *Leaves* alternate, tapering at the bafe into a kind of fheathing footftalk, linear, a foot, or much more, in length, flat, fmooth, bluntifh, quite entire, fplitting longitudinally a little above the bafe, on the upper fide, and putting forth from that fiffure a linear, obtufe, flat *receptacle* or *fpadix*, two inches long, covered in front with a feries of naked *flowers*. Each of thefe *flowers* confifts of a green *anther*, and a *piftil* of the fame hue, parallel to it; but in fuch an alternate order, that the *anther* of each flower is contrary to that of its neighbour, and ftands above the *piftil* of the latter. The whole *herb* is flaccid and tender; yet Linnæus fays it is ufed in fome parts of Sweden to make a thatch, which is very durable, and likewife to ftop up chinks in wooden buildings. It ferves alfo for manure, as well as the various kinds of fea-weed.

Whether the varieties above indicated may any of them prove diftinct fpecies, muft be left for future inquiry. The β is a fmall flender plant, differing in nothing but its leffer dimenfions from the common kind. It is well reprefented in one of Micheli's unpublifhed plates. γ is larger, more compact, and branched; we can fcarcely doubt its being Micheli's t. 59. Of the others we know no more than can be gathered from Ray's *Synopfis*.

Z. oceanica of Linnæus is quite different from any of thefe fuppofed varieties, conftituting a diftinct genus, called *Poffidonia Cavolini*, by Mr. Konig, in Ann. of Bot. v. 2. 95. t. 6; and well defcribed by don Philip Cavolini of Naples, in a differtation on thefe plants. De Candolle has named it *Caulinia*, but it is not Willdenow's. In Micheli's unpublifhed figures above cited, t. 58, is a good figure of this. We never met with any authority for its being a native of the Britifh coaft; but Mr. Horner, in a paper publifhed by the Geological Society, in their Tranfactions, v. 3, mentions the fubmarine remains of a foreft, on the Suffex coaft, in the brown vegetable earth, accompanying which are found fragments of a plant, whofe *leaves* were thought by Mr. Brown to refemble *Zoftera marina*, except that, being much broader than ufual, he fufpected they might belong to *Z. oceanica* above-mentioned. If thefe leaves were fufficiently perfect to exhibit the three ribs, that queftion might perhaps be determined. As to the breadth, or fize, of the *leaves* in in this whole tribe, nothing is more variable. We have Z. *ciliata* of Vahl; to which he attributes *leaves* an inch or more in breadth: whose *leaves*, in our different specimens, are but one-third or one-fourth of an inch wide, and from three inches to eight inches long. Z. *marina* differs with us from one-eighth to one-fourth of an inch in width, and if the above synonyms be all right, its variations are still greater.

2. Z. *uninervis*. Single-ribbed Grass-wrack. Forsk. Ægypt.-Arab. 157. Vahl n. 2. Willd. n. 2.—"Leaves entire, single-ribbed. Stem compressed; swelling at the joints."—Found by Forskall on the coast of the Red sea at Mocha, growing under water, and resembling overflowed grass. The *stem* is yellow, with bent joints. *Leaves* a span long, or more, narrower than in Z. *marina*, with an obscure mid-rib, unattended by lateral ones; and their base is sheathing.

Z. *ciliata*, Vahl n. 3; and *stipulacea*, his n. 4; found by Forskall at the same place as the last, with whose fructification Vahl was, in both instances, unacquainted, are referred by Mr. Konig, in Ann. of Bot. v. 2. 97, not without some doubt, to a new dioecious genus, denominated *Thalassia* in Dr. Solander's MSS., of whose fructification no figure has appeared, and of which the male flowers only have been observed. They are indeed sufficiently remarkable, as the following characters evince. *Sheath* single-flowered, of one leaf, in two oblong obtuse segments. *Perianth* of three ovate-oblong, obtuse leaves. *Cor.* none. *Filaments* none. *Anthers* nine, converging, linear-lanceolate, shorter than the calyx. The want of a slit in the *leaves* of these two last-mentioned plants proves them to be no *Zosteræ*.

ZOTENBERG, in *Geography*, a mountain of Silesia, in the principality of Schweidnitz, on which is a celebrated chapel; 20 miles W. of Breslau.

ZOTHECA, among the *Ancients*, the place where the animals designed for sacrifice were kept.

ZOUF, in *Geography*. See GAUR.

ZOUF, a river of Grand Bucharia, which runs into the Dehasp, 45 miles S. of Balk.

ZOU-KEOU-KIAOU, a town of China, in Pe-tche-li; 5 miles S.W. of Peking.

ZOULNOUN, a town of Asiatic Turkey, in the government of Sivas; 10 miles S.S.W. of Amasreh.

ZOUR EL HAMMAN, or *Island of Pigeons*, a small island in the Mediterranean, near the coast of Algiers. N. lat. 36° 26′. E. long. 12° 38′.

ZOUR, *Shahr e.* See SHAREZUR and SOLYMANIA.

ZOWAMORE, or ZIMBRA, an island in the Mediterranean, near the N.E. coast of Tunis, called by the ancients Ægimurus; 18 miles N.N.W. of Cape Bon. N. lat. 36° 50′. E. long. 11° 8′.

ZOWHAREEN, a town of Africa, in the kingdom of Tunis; 16 miles E.S.E. of Keft.

ZOW-WAN, or ZAGWAN, a town of Africa, in the kingdom of Tunis. It is a small flourishing town, built upon the north-east extremity of a conspicuous mountain of the same name. It is in great repute for the dyeing of scarlet caps, and the bleaching of linen; great quantities of both being daily brought thither for that purpose from Tunis, Susa, and other places. The stream which is employed at present for this use was formerly, together with the river Zungler, conveyed to Carthage; and over the fountains of it there was a temple erected, the ruins of which continue likewise to this day: upon this ancient gate, which regards the south-east, there is a ram's head, armed, in basso relievo, with AUXILIO, in large letters, below it. This may, perhaps, instruct us, that Zow-wan, or whatever was its former name, was under the immediate influence and protection of Jupiter Ammon; 36 miles S.W. of Tunis. N. lat. 36° 14′. E. long. 10° 6′.

ZOXO, a town of Asiatic Turkey, in the government of Diarbekir; 20 miles S.S.E. of Kerkisieh.

ZOYSIA, in *Botany*, was so named by the late professor Willdenow, in honour of the baron Charles de Zoys, a dignified ecclesiastic, resident in Carniola, who has long pursued with ardour the investigation of the botanical treasures of that country, and who is celebrated by Host, Wulfen, Jacquin, and other eminent writers, for the assistance which he has at various times afforded them.—"Willd. in Nov. Act. Nat. Cur. Berol. v. 3. 440." Brown Prodr. Nov. Holl. v. 1. 208. ("Matrella; Pers. Syn. v. 1. 73.")—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*, Linn. Juss.

Gen. Ch. *Cal.* Glume of one valve, single-flowered, ovate-oblong, compressed, cartilaginous, smooth, rigid, keeled, incurved, gaping at the apex of one edge; convex on one side; flattish on the other. *Cor.* Glume of two thin, membranous valves, enclosed within the calyx, awnless. Nectary none. *Stam.* Filaments three, capillary, short; anthers hastate. *Pist.* Germen superior, linear, minute; styles two, the length of the calyx; stigmas prominent, feathery. *Peric.* none, except the permanent glumes. *Seed* solitary, linear, invested with the calyx and corolla.

Ess. Ch. Calyx of one valve, single-flowered, compressed, cartilaginous. Corolla of two membranous valves, within the calyx. Stigmas feathery. Seed linear, invested with the glumes.

1. Z. *pungens*. Sharp-pointed Zoysia. Willd. as above. Brown n. 1. (Agrostis Matrella; Linn. Mant. 185. Willd. Sp. Pl. v. 1. 366. "Matrella juncea; Pers. Syn. v. 1. 73.")—Gathered in sandy ground, on the coast of Malabar, by Koenig; and near Port Jackson, New South Wales, by Mr. Brown. This is a small perennial grass, with a creeping *root*, enveloped in sheathing furrowed scales. *Stems* alternate, ascending, slender, thread-shaped, simple, leafy, three or four inches high. *Leaves* two-ranked, spreading, involute, sharp-pointed, smooth, an inch or an inch and a half long, with pale, furrowed, close *sheaths*, concealing the joints of the stem. *Stipula* of several spreading hairs. *Clusters* terminal, solitary, quite simple, of ten or twelve nearly sessile, alternate, erect *flowers*, remarkable for their smooth ivory-like *glumes*, about two lines in length, out of which, at the tip, project the feathery *stigmas*.

Linnæus was inclined to make this a distinct genus by the name of *Matrella*; derived from *matrix*, and alluding to an anatomical resemblance, too obscure to be very instructive, if it were liable to no other objection. Such allusions were allowable enough while botany remained the abstruse study of philosophers and physicians; but in proportion as it becomes general and popular, they are either useless or censurable. This grass might be forced into *Agrostis* as the definition of that genus stood in Linnæus, but has certainly no natural habit, nor any precise character, in common therewith. Mr. Brown remarks, that the *corolla*, (his *perianthium*,) is inverted, or contrary to the single-valved *calyx*; on which account, added to the nearly spiked *inflorescence*, he ranges *Zoysia* near *Rottböllia*. We cannot but think it rather more related to *Panicum Dactylon* of Linnæus, Haller's *Digitaria*; though in fact so distinct in its nature, as not to associate well with any thing.

ZOZONISIUS, in *Natural History*, a name of one of the gems of the ancients, but of which our accounts are so short, that we can make no conjecture of what it was. Pliny only tells us, that it was found in the river Indus, and used by the magi.

ZRATSCHE, in *Geography*, a town of Bohemia, in the circle of Czaſlau; 16 miles S.W. of Czaſlau.

ZRIN, a town of Croatia, near the river Unna; 40 miles E.S.E. of Carlſtadt. N. lat. 45° 16′. E. long. 16° 55′.

ZSCHOPA. See TSCHOPA.

ZSCHORLAU, a town of Saxony, in the circle of Erzgebirg; 10 miles S.S.E. of Zwickau.

ZSOKEN, a town of Saxony, in the circle of Erzgebirg; 8 miles N.W. of Grunhayn.

ZUAQUI, a town of New Mexico, in the province of Sonora; 8 miles S.S.E. of Pitquin.

ZUATA, a town of New Grenada; 45 miles N.N.E. of Tunja.

ZUBETH, a town of Perſia, in the province of Chuſiſtan; 105 miles N.W. of Suſter.

ZUBIA, a town of Spain, in the province of Grenada; 4 miles S.E. of Grenada.

ZUBTZOV, a town of Ruſſia, in the government of Tver, on the Volga; 68 miles S.W. of Tver. N. lat. 55° 46′. E. long. 34° 50′.

ZUCARELLO, a town of Genoa; 7 miles N.N.W. of Albenga.

ZUCCAGNIA, in *Botany*, ſo named by the late abbé Cavanilles, in honour of Dr. Attilius Zuccagni, ſuperintendent of the garden at Florence.—Cavan. Ic. v. 5. 2. Poiret in Lamarck Dict. v. 8. 875.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coloured; tube turbinate; limb in five deep, oblong, obtuſe, permanent ſegments, the lower one a little the longeſt. *Cor.* Petals five, obovate, inſerted into the calyx; the uppermoſt broadeſt, vaulted. *Stam.* Filaments ten, awl-ſhaped, aſcending, hairy in their lower part, about as long as the corolla; anthers roundiſh, of two lobes, divided by a furrow. *Piſt.* Germen ſuperior, roundiſh, compreſſed; ſtyle capillary, of the length and poſition of the ſtamens, ſmooth; ſtigma funnel-ſhaped. *Peric.* Legume ovate, oblique, compreſſed, hairy, of one cell and two valves. *Seed* ſolitary, ovate, compreſſed, attached by its ſtalk to the ſummit of the legume. *Cavanilles.*

Eſſ. Ch. Calyx bell-ſhaped; its limb in five permanent ſegments. Petals five, obovate; the upper one broadeſt, vaulted. Legume of one cell and two valves. Seed ſolitary.

1. Z. *punctata*. Dotted Zuccagnia. Cavan. as above, t. 403. Poiret n. 1.—Native of hills in Chili, between *Portillo* and the ſprings commonly called *Manantiales*, bearing flowers, as well as ſeed, in January. It was communicated to the author by Louis Née, to whoſe diſcoveries in South America and New Holland his *Icones* are ſo much indebted. The *ſtem* is ſhrubby, four or five feet high, with numerous, twiſted, glutinous *branches*. *Leaves* alternate, abruptly pinnate, of numerous, alternate, ſeſſile, elliptical, entire, glutinous *leaflets*, each one-third of an inch long, marked on both ſides with blackiſh reſinous dots. *Cluſters* terminal, ſolitary, ſimple, of ſeveral rather ſmall *flowers*. *Partial ſtalks* one-third of an inch long, each with a little acute *bractea* at its baſe. *Calyx* ſmooth, reddiſh-brown, rather ſhorter than the corolla. *Petals* a line and a half long, ſaffron-coloured, with darker veins. *Anthers* deep orange. *Legume* about three lines in length, clothed with long ruſty hairs. *Seed* of a ſhining brown. This pretty ſhrub does not appear to have been raiſed in the gardens of Europe.

ZUCCARO, or ZUCCHERO, TADEO, in *Biography*, was a painter of conſiderable renown, born at S. Agnolo in Vado, in the duchy of Urbino, in 1529. His father Ottaviano Zuccaro was alſo a painter, but of moderate talents; and Tadeo was principally indebted to Pompeo de Fano for initiation in the art. Having, as he imagined, exhauſted the ſtore of information to be derived from his preceptor, animated by love of his art and a deſire to free his father from further charge on his account, he, at the age of 14, went to Rome, unknowing and unknown. His relation Franceſco d'Agnolo was then engaged painting, with Pierino del Vaga, the grotesques of the Vatican, and he had ſome hope of aſſiſtance from him; but his application was vain, and he was obliged to earn his daily bread by grinding colours in different ſhops, wherever he could find employment. He divided his time between this labour and copying from the works of Raphael, in the Palazzo Ghigi particularly, and was often compelled to ſleep under the loggie of the palace, being unable to procure better accommodation. Weary at length of ſo much miſery, he returned to his father, but ſoon left him to reviſit the great emporium of art. Fortune now began to ſmile upon him; he became known to an artiſt named Giacomone, and having improved much with him, and acquired ſome credit, his relation Franceſco d'Agnolo noticed him, and for a time they worked together. Afterwards he was engaged by Daniello da Parma, a ſcholar of Corregio and Parmegiano, to aſſiſt him in painting a chapel of Santa Maria, in a church at Vitto, in Abruzzo. The work was in freſco, and Zuccaro, according to Vaſari, painted a large portion of the ſubjects required. When this was done, he returned to Rome, and was employed by G. Mattie to paint a façade of the Palazzo Mattei in freſco, where he executed, in chiaro oſcuro, nine hiſtorical pieces relative to the hiſtory of Furio Camillo. He was then only 18, and the execution of them was a matter of ſurpriſe to all who ſaw them. By this his firſt public work he gained ſo much reputation, that he ſoon acquired conſiderable employment. The duke d'Urbino, hearing of his fame, ſent for him to Urbino, and gave him a commiſſion to paint in freſco the chapel of the Duomo there, which was delayed by various cauſes, and he returned to Rome in the time of Julius III., who employed him, under Vaſari, in the Vatican, to paint in a frieze the labours of Hercules, which were afterwards deſtroyed by pope Paul IV. to make room for other works. Hitherto he had been principally employed upon ornamental ſubjects, but now a ſerious one was entruſted to his pencil; and he painted in freſco, for the church of Santa Maria della Conſolazione, ſeveral ſubjects of the paſſion of the Saviour, which are regarded as among his beſt productions. He was afterwards called upon to exert his ſkill, by the cardinal Farneſe, in the Palazzo Caprarola. This is his greateſt work, and is that whereon his reputation moſt depends. He was liberally paid by the cardinal. The whole ornamental part of the building was entruſted to his care, and he laboured with great earneſtneſs to make it honourable to himſelf and pleaſing to his employer. It has been engraved by Prenner in a ſet of 45 plates. Tadeo Zuccaro died at Rome in 1566.

ZUCCARO, FEDERIGO, was a younger brother of Tadeo juſt mentioned, and born in 1543. He received his inſtruction from his brother, with whom he was placed at Rome, when very young, and who paid him the moſt affectionate attention. He ſoon rendered himſelf uſeful to Tadeo in his great works, and engaged alſo in ſome labours for himſelf. Pope Pius IV. employed him, in conjunction with F. Barrocio, in the Palazzo Belvidere, where he gained great reputation. The brothers continued to work together without rivalry, and co-operated at the Vatican and the Villa

Villa Farnese. He was invited to Florence by the grand duke to finish the cupola, left imperfect by Vasari, and succeeded in pleasing his employer.

Gregory XIII. engaged him to paint the vault of the Capella Paolina; but having some dispute with the officers of his holiness, he avenged himself by a satirical picture which he exhibited. By this the pope was offended, and Zuccaro was obliged to fly, and leave his great work unfinished. He took refuge in France, where he was sometime employed by the cardinal of Lorrain; and from thence he went to Flanders, where he painted cartoons for tapestries.

In 1574 he visited England, and was received very favourably. Here he painted portraits. The queen sat to him, and many of the nobility. How long he remained here is not exactly known. When he returned to Italy, he went to reside at Venice, where the patriarch Grimani employed him in his chapel to finish the fresco ornaments begun by Battista Franco, and he added some designs of his own to them. He also painted there a large picture of the Adoration of the Magi. In conjunction with the great masters then living in Venice, he was employed in the hall of the grand council of that city, and he obtained as his reward the honour of knighthood. He soon after returned to Rome, and the pope not only overlooked his indiscretion, but allowed him to complete the work he had begun in the Capella Paolina.

On the accession of Sixtus V. he was invited to Madrid by Philip II. to adorn the walls and ceilings of the Escurial; but though he painted with his usual skill, and covered immense quantities of space, he had not his usual success in affording pleasure to his patron. Philip was not gratified with his works, and Zuccaro was dismissed; not, however, without being munificently rewarded for his labours. The works he left behind him were afterwards covered over by others from the hand of Pellegrini Tibaldi. On his return to Rome he established the academy of St. Luke, for which he received letters patent from Gregory XIII., and to which, at his death, which happened in 1609, he bequeathed all his property.

The talents of the Zuccaros were more splendid than great. They designed and executed with facility; but aiming at grandeur, fell into manner; and the vice of mannerism touches also the colour and chiaro oscuro of their productions. Sometimes happy in all parts, but more frequently defective in the principal one of expression and feeling, their works please without gratifying; and though they attract, do not absorb the spectator.

ZUCCHABARI, Chadara, in *Ancient Geography*, a town of Mauritania Cæsariensis, situated on the left bank of the river Chinalaph, and towards the north-east of mount Zalacus. This is very probably the Succabar and Colonia Augusta of Pliny.

ZUCCHARA, Zung-gar, an ancient town of Africa, and the most northerly of those which lay between Zingitania and Biracium. Its magnificent ruins and its temple are the coverts of Arabs.

ZUCCHERELLI, Francesco, in *Biography*, a very pleasing landscape painter, was born at Pitigliano in Tuscany, in 1702. He for some time attempted history, but abandoned it, and adhered solely to landscapes, which he adorned with very agreeably composed groups of figures. In 1752 he visited England, where he was much encouraged; but our greatest debt to him is due for his having persuaded Wilson to adopt landscape for his object, instead of portrait. For this liberal act what adequate thanks can be offered to his memory? At the foundation of the Royal Academy he was chosen an original member. After remaining here twenty years, he returned to Italy, and settled at Florence, where he had the misfortune to be reduced to indigence, by the suppression of a monastery where he had lodged the money he had acquired. He again resumed the pencil to support himself, and died at Florence in 1788, aged 86.

ZUCCO, in *Geography*, a town of Italy, in the county of Friuli; 5 miles N.W. of Friuli.

ZUCCORA, a river of European Turkey, which runs into the Morava, near Nissa.

ZUCHABARUS, in *Ancient Geography*, a mountain of Africa Propria, in which the river Cyniphus and the fountain Acaba have their source. Herodotus called it "Charitum Mons."

ZUCHIS, a lake of Africa Propria, which is, according to Strabo, 400 stadia in circuit; and on the bank of the lake is a town of the same name.

ZUCHOW, in *Geography*, a town of Poland, in Volhynia; 32 miles E. of Lucko.

ZUCKMANDEL, a town of Silesia, in the principality of Neisse, the see of a bishop; 17 miles N.N.W. of Jagerndorf. N. lat. 50° 8'. E. long. 17° 16'.

ZUCKTOK, a town of Mexico, in the province of Yucatan; 80 miles S. of Campeachy.

ZUDA, a town of Arabia, in the province of Yemen; 12 miles W. of Chamir.

ZUDISHTIRA, in *Hindoo Mythology*, is one of the heroic sons of Pandu, whose wars and adventures occupy a considerable portion of the Mahabarat, an epic poem of great celebrity in the Shanscrit language. See Mahabarat and Shanscrit.

ZUEECA, in *Geography*. See Giuducca.

ZUEELA, Zuila, or *Zawila*, a considerable town of Africa, in the kingdom of Fezzan, said to have been anciently the capital, containing many rich merchants, situated in a fertile country. The remains of ancient buildings in this town, the number and size of the cisterns, and the construction of the vaulted caves, intended perhaps as repositories for corn, exhibit such vestiges of ancient splendour, as will probably attract, and may highly reward, the attention of the future traveller; 60 miles E.N.E. of Mourzouk. N. lat. 27° 35'. E. long. 16° 45'.

ZUENGA, a town of Thibet; 176 miles W.S.W. of Lassa. N. lat. 28° 32'. E. long. 88° 10'.

ZVENIGOROD, a town of Russia, in the government of Moscow, on the Moskva; 28 miles W. of Moscow. N. lat. 55° 40'. E. long. 35° 34'.

ZUENZIGA, a desert district of Africa, in the country of Sahara, situated to the south of Tafilet.

ZVERINOGOLOVSKAIA, a fort of Russia, on the Tobol; 52 miles S. of Okunevsk.

ZUEVA, a town of Russia, in the government of Irkutsk, at the union of the Kotoi and the Angara; 60 miles N.N.W. of Irkutsk.

ZUF, a town of the country of Candahar; 50 miles N.W. of Candahar.

ZUFFERABAD, a town of Hindoostan, in the subah of Moultan, near the Rauvee; 25 miles N.E. of Moultan.

ZUFFIRWAL, a town of Hindoostan, in Lahore; 10 miles N.N.E. of Sealcot.

ZUFFOLO, in the *Italian Music*, a little flute or flageolet, having a very shrill sound, like the whistling of small birds.

ZUF-FOONE, or *Mers el Fulom*, in *Geography*, a seaport of Algiers; 36 miles W.N.W. of Boujeiah.

ZUG, a canton of Switzerland, bounded on the north and eaſt by Zuric, on the ſouth by Schweitz, and on the weſt by Lucerne; only about ten miles long, and nearly as much in breadth. The paſtures here are excellent, and it produces alſo a ſufficiency of grain, with plenty of fruit, and ſome wine. On one ſide of the Zug lake, the country is covered with cheſnut-trees, which form a very profitable branch of trade, by the ſale of the nuts to the neighbouring countries. This diſtrict, on the extinction of the counts of Lenzburg, devolved to thoſe of Kyburg, which latter alſo failing, it came to the counts of Habſburg, and in them to the houſe of Auſtria, towards which it always manifeſted an inviolable attachment; but in the year 1351, the town of Zug being beſieged by the Helvetian confederacy, and not only neglected by the archduke, but even recommended by him to ſurrender, it followed his advice, and was admitted into the confederacy, to which its territory had previouſly acceded. The generoſity of the conquerors rivalled the courage of the vanquiſhed; for, in conſequence of their ſubmiſſion, the canton of Zug was reſcued from the yoke of a foreign maſter, obtained liberty and independence, and was admitted into the Helvetian confederacy upon equal terms. This canton is the ſeventh in rank, and among the leſſer ones the fifth; beſides which, it is in a particular manner connected with Lucerne, Uri, Schweitz, and Underwalden, commonly called the five territorial confederates. The government of this little canton is exceedingly complicated; and the inhabitants of the town have ſomewhat more influence, and enjoy a greater ſhare in the adminiſtration of affairs, than thoſe of the capital burghs in the five other democratical cantons. The ſupreme power reſides in the inhabitants of Zug, Bar, Egeri, and Meutzingen, who aſſemble yearly to enact laws, and chooſe their magiſtrates. The landamman, reciprocally elected from each of the four diſtricts, continues three years in office when taken from Zug, and but two years when choſen from each of the three other diſtricts. The general adminiſtration of affairs is entruſted to the council of regency, compoſed of forty members, of whom thirteen are ſupplied by the diſtrict of Zug, and twenty-ſeven ſelected equally from the three remaining communities. This council, as well as the landamman, reſides always in the capital. Zug was the only one of the ſmall cantons which did not ſend its contingent to the army, but made a ſhew of reſiſtance to the impoſition of the new conſtitution. On the 29th of April, Zug was inveſted by French troops, ſurrendered on the 30th, and on the 1ſt of May accepted the new conſtitution. The people of this canton are reckoned the moſt reſtleſs of Switzerland: their general aſſemblies are often tempeſtuous, though ſeldom attended with bloodſhed.

Zug, a town of Switzerland, and capital of the above deſcribed canton, is beautifully ſituated at the north-eaſt extremity of a lake, in a fertile valley, abounding with corn, paſture, and wood. It contains two churches, a convent, a town-houſe, arſenal, corn-magazine, a college, hoſpital, &c. The titular ſaint of this place is Oſwald, king of Northumberland in the ſeventh century, who was defeated and ſlain in 624 by Peuda, king of the Mercians. In the church is his ſtatue, with this inſcription: "Sanctus Oſwaldus Rex Angliæ Patronus hujus Eccleſiæ." This king was much renowned for his chaſtity, piety, and power of working miracles; 15 miles S. of Zurich. N. lat. 47° 6'. E. long. 8° 16'.

Zug, a lake of Switzerland, eight miles long, and two wide, abounding in fiſh. It receives its name from the town on its coaſt.

ZUGANA, in *Ancient Geography*, a town in the interior of Arabia Felix. Ptol.

ZUGAR, a town of Africa Propria, between the rivers Bagradas and Triton.

ZUGARI, in *Geography*, a town of Naples, in Calabria Ultra; 6 miles N. of Nicotera.

ZUGLIANO, a town of Italy, in Friuli; 4 miles S. of Udina.

ZUHREE, a diſtrict of the province of Balouchiſtan, or Ballagiſtan, which is conſidered by ſome as a province diſtinct from Mekran or Mecran, and by others as the northern diviſion of it. However this be, Balouchiſtan is a confuſed maſs of tremendous mountains, affording paſture nevertheleſs for numerous flocks of ſheep and herds of cattle, and producing great quantities of wheat. The territories of its chief comprehend all the countries that lie between 20° 30' and 30° N. lat., and from 65° to 69° E. long.; and Balouchiſtan is divided into the two mountainous provinces of Ihalawnam and Sarawan, the low country of Cutch Gandava to the eaſt, and the provinces of Zuhree and Anund Dajal, to which may be added the ſmall diſtricts of Shat and Muſtung, lying north of Kelat. Zuhree, though it is entirely ſubject to the khan of Kelat, pays very little to him, as its revenues are enjoyed by Zadir Bukſt, of the Zuhree tribe of Balouches. The chief town is Zuhree, which contains from one to two thouſand houſes. The ſecond town, nearly as large, is Dadur; beſides which, there are many populous villages; and upon the whole, this is ſpoken of as the moſt civilized part of Balouchiſtan, the capital of which is Kelat.

ZUIA, a river of Spain, which runs into the Guadiana, a little above Medellin.

ZUICK, a town of Pruſſia, in Natangen; 8 miles N.W. of Lick.

ZUILA. See Zueela.

ZUINGLE, or Zwingle, Ulric, in *Biography*, the *Swiſs Reformer*, was born January 1, 1484, at the village of Wildhauſen, in the county of Tockenburg; and having diſcovered in his youth a ſtudious diſpoſition, was intended by his father for the church. Accordingly he was ſent for education firſt to Baſil, and then to Berne, where attempts were made to fix him in the convent of the Dominicans; but in order to prevent their taking effect, his father removed him to the univerſity of Vienna, which was then in high reputation. Returning from thence to Baſil, he was choſen claſſical tutor in his 18th year, where he made very conſiderable advances in knowledge, and particularly in that of the profeſſion to which he was deſtined, whilſt he taught others; availing himſelf of the lectures of Thomas Wyttembach, who, without renouncing the ſyſtem of the ſchools, allowed his pupils to think freely for themſelves. After a reſidence of about four years at Baſil, Zuingle took the degree of M.A., and being choſen paſtor of Glarus, was ordained by the biſhop of Conſtance. Having commenced a courſe of liberal inquiry, he indefatigably purſued it, critically examining the New Teſtament as the directory of his faith, and conſulting a variety of writers who had incurred the cenſure of the church of Rome. The conſequence of this mode of ſtudy was a diſcovery of the deviation of the eccleſiaſtical ſyſtem, generally adopted and eſtabliſhed, from that of Chriſtianity, both in doctrine and practice. But he was ſlow in publiſhing the theological ſentiments which he had imbibed, and for ten years purſued a courſe of practical inſtruction at Glarus, which ſecured to him the reſpect and affection of his pariſhioners, ſo that the bigotted clergy could not ſucceed in their attempts to do him injury. From Glarus he removed to the celebrated abbey of Einſidlin, where he accepted the office of preacher, and where he had an opportunity of aſſociating with

with perfons of learning, and of contributing to the education of candidates for the miniftry. Whilft he was at Glarus he expofed feveral fuperftitions of the church of Rome; and at Einfidlin he gained additional reputation by preaching againft vows, pilgrimages, and offerings. Here he employed his influence fo effectually, that he ordered the infcription over the abbey-gate, "Here plenary remiffion of fins is obtained," to be effaced, and the relics to be buried; and, among other rules which he eftablifhed in a convent of females under his direction, he introduced one for obliging the nuns to read leffons in the New Teftament, inftead of reciting their hours. He was alfo intrepid and zealous in propagating rational fentiments of religion, and with this view he availed himfelf of a public occafion, when a crowd was affembled, to deliver a fermon defigned to fhew that no fuperior fanctity refided in any place fo as to confer peculiar merit on vows addreffed from it, but that their acceptance depended upon the purity of the heart and life of the worfhipper. Declarations of this kind, whilft they gained the approbation of fome of his auditors, excited the indignation of others, and alarmed the monks of this and neighbouring convents. Although he was regarded with jealoufy and terror by thofe whofe intereft led them to oppofe reformation, he was fo much refpected, that his ecclefiaftical fuperiors manifefted no difpleafure againft him; and by his correfpondence with Erafmus, Glareanus, Hedio, Rhenanus, and other learned perfons, he eftablifhed a reputation which enabled him to encourage liberal ftudies. In 1518 he was invited to occupy the vacant poft of preacher in the cathedral of Zurich, and before he was inftalled he announced his propofed plan of preaching, which differed from that which had been before practifed, and which gave him an opportunity of explaining the books of the New Teftament in an uninterrupted feries, without regard to texts that were marked for each Sunday and Saint's-day in the year. This plan was approved by the majority of the chapter, and drew together a crowded auditory, who expreffed in high terms their admiration of the preacher. A circumftance occurred which afforded him a complete victory over an emiffary of pope Leo X., who was employed in the fale of indulgences, infomuch that he was obliged to quit the city and retire into Italy. Some writers, efpecially among the Catholics, have referred the origin of the reformation, and of the oppofition of both Zuingle and Luther to the papal authority, to the difputes about indulgences; but, although this quarrel might have contributed to the promotion of it, the people were previoufly prepared for the event by the preaching and conduct of Zuingle, and by the judgment and prudence with which he had planned and purfued his meafure for this purpofe. Luther proceeded very flowly to that exemption from the prejudices of education, which Zuingle, by the force of an adventurous genius, and an uncommon degree of knowledge and penetration, eafily got rid of. And we learn from the moft authentic records of hiftory, that he had explained the Scriptures to the people, and called in queftion the authority and fupremacy of the pope, before the name of Luther was known in Switzerland. In procefs of time, after Luther had taken up arms againft Rome, Zuingle, being then minifter of the chief church in Zurich, concurred with him; preaching openly againft indulgences, then againft the interceffion of the faints, then againft the mafs, the hierarchy, the vows and celibacy of the clergy, abftinence from flefh, and alfo many things which Luther was difpofed to treat with toleration and indulgence; fuch as images, altars, wax-tapers, the form of exorcifm, and private confeffion, &c. Zuingle, at an early period of his miniftry, had declared his decided difapprobation of all wars, excepting thofe that were undertaken for the defence of the country; and fuch was the influence of his opinion, that the canton of Zurich refufed to concur with the other cantons in a fubfidiary treaty with the French king. The refult of his arguments and remonftrances to this effect was a law paffed by the affembly of the canton in 1522, abolifhing all alliances and fubfidies for the term of 25 years. He laboured at the fame time to enforce a regard to the rules of the gofpel in preference to the refpect that was generally manifefted to thofe of ecclefiaftical difcipline. Accordingly he defended thofe perfons who had been denounced to the magiftrate for infringing on the "faft of Lent" without a difpenfation; and publifhed on this occafion his treatife "On the Obfervation of Lent," which contained fome free opinions on the obligation of fafting and keeping particular days. When the bifhop of Conftance remonftrated againft his proceeding, and endeavoured by his charge and letters to excite apprehenfions among the people, and in the council and chapter of Zurich, that he would fpread through Switzerland fuch a flame as Luther had kindled in Germany, Zuingle obtained permiffion to reply; and compofed a tract to prove that the gofpel alone is authority from which there is no appeal, and that the decifions of the church are binding only inafmuch as they are founded on Scripture. When the bifhop of Conftance had prevailed with the deputies of the Helvetic diet to order the arreft of a paftor accufed of preaching the "new doctrine," Zuingle, who had now adopted and openly avowed the principles of the reformation, addreffed to the heads of the cantons, in his own name and that of his friend, a fummary of his doctrine, annexing an intreaty that they would allow liberty for the preaching of the gofpel. In a conference before the deputies of the bifhop of Conftance, in the prefence of the great council of Zurich, held in 1523, Zuingle gave an account of his doctrine; and the colloquy terminated in the following declaration of the council: "That Zuingle, having been neither convicted of herefy, nor refuted, fhould continue to preach the gofpel as he had already done; that the paftors of Zurich and its territory fhould reft their difcourfes on the words of Scripture alone; and that both parties fhould abftain from all perfonal reflections." Zuingle, having been thus fupported by the magiftrates, and having obtained a public fanction of the principles of the reformation in this canton, has been charged, both by Catholics and Proteftants, with allowing to the fecular power an undue degree of authority in ecclefiaftical matters; however it has been urged in his defence, that he did not intend to transfer to government the abfolute power over confciences claimed by the popes; but that, for the prefervation of order and tranquillity, he thought that the depofitories of lawful authority ought to have a fhare in the direction of ecclefiaftical affairs. Zuingle, though thus fupported, proceeded with caution in promoting alterations in the ceremonies and modes of public worfhip, and was principally anxious to lay a proper foundation of change by enlightening the underftanding and convincing the judgment of the people. When fome zealous reformifts inftigated a mob to pull down a crucifix that had been erected at the gate of the city, and the culprits were brought before the council to be tried and punifhed, Zuingle interpofed; and whilft he vindicated the offenders from the charge of facrilege, he gave it as his opinion, that they deferved fome punifhment for having pulled down the crucifix without the authority of the magiftracy. This difpute led to a general colloquy, which was held in October 1523; and the refult was, that all the culprits, except Hottinger their ring-leader, and the perfon who had actually

tually committed the offence, were fet at liberty; but Hottinger was banifhed from the canton for two years; and he was afterwards put to death for herefy, in confequence of a fentence pronounced by the deputies of feven cantons at Lucerne, notwithftanding the interceffion of Zurich. The queftion of the celibacy of the clergy was agitated in thefe colloquies, and though no decifive opinion was given by the council, feveral clergymen married, and among them was Zuingle himfelf, who had expreffed his fentiments againft the queftion, at the age of 40. In 1524, the council of Zurich proceeded to the reformation of public worfhip according to the plan propofed by Zuingle. They began with caufing all pictures and ftatues to be removed by thofe whofe anceftors had confecrated them; and of thefe feveral were deftroyed. Thefe meafures occafioned alarm and complaint in the other cantons; and acts of hoftility were meditated. Without entering into a detail of the various circumftances that occurred on one fide and on the other, we fhall content ourfelves with obferving, that fanaticifm and bigotry were engaged in oppofition to each other, and produced in Switzerland effects fimilar to thofe that have attended innovation and reformation in other countries. At Zurich, the total fubverfion of the Romifh worfhip was accomplifhed, by prohibiting proceffions and other ceremonies, and by the abolition of the facrifice of the mafs. The latter event took place by the activity of Zuingle in 1525; and on Eafter Sunday the Lord's Supper was celebrated according to his idea of this rite, which was that of a merely commemorative and fymbolical fervice. Our reformer difplayed in another inftance a difinterefted fpirit, which reflects great honour on his memory. Although he was one of the canons who compofed the chapter of the cathedral, and this body was independent of the council, and poffeffed its own jurifdiction and property, he prevailed with the majority of his colleagues to confecrate the large revenues of the chapter to eftablifhments for public inftruction, and to transfer its temporal power to the government. In the conduct of this event he manifefted no lefs wifdom and moderation than difintereftednefs; for the chapter charged itfelf with the payment of as many paftors as were neceffary for the public worfhip of the city, to which fervice thofe canons who were capable of fervice were devoted. Thofe who were old and infirm were allowed to preferve their benefices for life; and their revenues, as they became vacant, were to be employed in founding profefforfhips for lectures, to which admiffion was to be gratuitous. Thefe liberal conditions were religioufly obferved, and the regulations thus framed are ftill continued at Zurich. The orders of mendicants, and other religious houfes, were abolifhed; and their revenues were appropriated to the fupport of hofpitals, and other charitable inftitutions, as the old members dropped off. Zuingle was afterwards commiffioned to organize a fyftem of public inftruction, in which he difplayed a cultivated and liberal mind.

The reputation which Zuingle had acquired, and the fuccefs which had crowned his plans and labours in the caufe of reformation, were not fufficient to fecure him againft the prejudices of fanatics, and the hoftile attacks of malignity. Attempts were made to affociate him with Munzer, one of the leaders of the Anabaptifts; but he happily avoided the fnare that was laid for him, and inftead of taking part in thofe violences which called forth the interpofition of the civil power, and which terminated in the death of one of the perfons concerned, he did all that lay in his power to prevent them; and though he could not preferve the life of one difturber of the public peace, he compofed the tumult occafioned by the intemperate zeal of others. Notwithftanding the fingular prudence and moderation which influenced his whole conduct, his reputation excited envy, and a confpiracy was formed againft his life. Under the protection of the magiftracy of Zurich he was fafe; but his enemies infidioufly propofed a conference at Baden, in Argovia. His friends, however, were not unapprifed of his danger, and well knowing that the cantons were actuated by inveterate hoftility againft his perfon as well as his doctrines, they would not confent to his leaving Zurich. At the conference, which he prudently declined to attend, enmity was avowed both againft him and his adherents. Some of the cantons, however, withheld their concurrence; and this was particularly the cafe with refpect to the canton of Berne. In this canton, the reformation had made confiderable progrefs, fo that in 1527 feveral of its municipalities addreffed the fenate for the abolition of the mafs, and the introduction of the form of worfhip eftablifhed at Zurich. The reformers at Berne fummoned a convocation, to which the clergy of the other Helvetic ftates, and the neighbouring bifhops, were invited. Zuingle's attendance was alfo requefted; and he thought it his duty to appear in that affembly, profeffedly convened for the advancement of the reformation. Haller was the leader of the party in this canton, and in connection with Zuingle and other coadjutors the caufe to which they were devoted obtained a complete triumph; fo that the grand council of that canton fully adopted the meafures of that of Zurich. Upon this, five of the cantons which were attached to the old religion entered into a folemn engagement not to fuffer the doctrines of Zuingle and Luther to be preached among them. At length the hoftilities that fubfifted between the Catholic and reformed cantons were amicably terminated by the treaty of Cappel in 1529. The animofity, however, between thefe cantons was not extinguifhed. It broke out again with greater violence than ever; and the fenate of Zurich has been charged with the firft aggreffion, by arbitrary acts in favour of the reformed preachers in the common bailiages. Its project of fecularizing the abbey of St. Gall, which belonged to the Helvetic confederacy, was a greater grievance; and on the other hand, the five affociated Catholic cantons refufed to concur with the others in expelling the Spaniards from the Valteline, and perfecuted the reformed in their jurifdictions with the greateft feverity. The fufferers fought the protection of Zurich, and the eloquence of Zuingle was employed in recommending their cafe to the fenate. The breach widened, and a majority of the Proteftants agreed in ftopping the tranfit of provifions to the five cantons, which depended upon foreign fupplies. Zuingle in vain remonftrated againft this cruel act; and the five cantons took up arms, and having publifhed a manifefto, marched into the field in October 1531. A detachment was ordered to prevent the junction of the forces of Berne with thofe of Zurich, and the main body advanced towards Cappel. This intelligence alarmed the people of Zurich; and they could only fpare 700 men for the relief of their countrymen at Cappel. Zuingle was appointed to accompany them. A battle enfued; and though the Zurichers, animated by his exhortations, defended themfelves valiantly, they at length were compelled to yield to fuperiority of numbers, and were entirely routed. Some died at their pofts; others fled: and Zuingle received a mortal wound at the commencement of the action, and fell fenfelefs to the ground. As foon as he had recovered fufficiently to raife himfelf up, he croffed his arms on his breaft, and lifted his languid eyes to heaven. In this condition he was found by fome Catholic foldiers, who, without knowing him, offered to bring a confeffor;

but

but as he made a sign of refusal, the soldiers exhorted him to recommend his soul to the holy virgin. On a second refusal, one of them furiously exclaimed, "Die then, obstinate heretic!" and pierced him through with a sword. His body was found on the next day, and the celebrity of his name drew together a great crowd of spectators. One of these, who had been his colleague at Zurich, after intently gazing on his face, thus expressed his feelings: "Whatever may have been thy faith, I am sure thou wert always sincere, and that thou lovedst thy country. May God take thy soul to his mercy!" Among the savage herd some voices exclaimed, "Let us burn his accursed remains!" The proposal was applauded; a military tribunal ordered the execution, and the ashes of Zuingle were scattered to the wind. Thus, at the age of 47, he terminated a glorious career by an event deeply lamented by all the friends of the reformation, and occasioning triumph to the partisans of the Romish church.

"In the character of Zuingle," says one of his biographers, "there appears to have been united all that makes a man amiable in private society, with the firmness, ardour, and intrepidity that are indispensible in executing the great task of reformation. By nature mild, his earnestness was the result of his sense of the importance of the cause he engaged in to the best interests of mankind, not of a dogmatic or dictatorial spirit. His views were large and generous, and his opinions rose above the narrow scale of sect or party. It was no small proof of liberality in that age that he ventured to assert his belief of the final happiness of virtuous heathens, and of all good men who act up to the laws engraven on their consciences. His temper was cheerful and social, somewhat hasty, but incapable of harbouring resentment, or indulging envy and jealousy. As a reformer he was original; for he had proceeded far in emancipating himself from the superstitions of Rome by the strength of his own judgment, and had begun to communicate the light to others, whilst Luther still retained almost the whole of the Romish system, and long before Calvin was known in the world. He was more learned and more moderate than the first of these divines, and more humane and kind-hearted than the last. He wrote many works of utility in their day; and the reform, of which he was the author, still subsists unchanged among a people distinguished by their morals and mental cultivation." Life of Zuingle, by J. G. Hess. Mosheim's Eccl. Hist. Coxe's Travels in Switzerland, vol. i. See ZUINGLIANS.

ZUINGLIANS, in *Ecclesiastical History*, a branch of ancient Reformers or Protestants; denominated from their author Ulric or Huldric Zuinglius. See ZUINGLE.

As to the eucharist interpreting *hoc est corpus meum*, by *hoc significat corpus meum*, he maintained, that the body and blood of Christ were not *really* present in the eucharist; and that the bread and wine were no more than external *signs* or *symbols*, designed to excite in the minds of Christians the remembrance of the sufferings and death of the divine Saviour, and of the benefits which arise from them. This opinion was embraced by all the friends of the reformation in Switzerland, and by a considerable number of its votaries in Germany. On the other hand, Luther held his doctrine, which was *consubstantiation*, with the utmost obstinacy; and hence arose, in 1524, a tedious and vehement controversy, which terminated, at length, in a fatal division between those who had embarked together in the sacred cause of religion and liberty. From this time, Zuingle propagated his doctrine concerning the eucharist in a public manner by his writings, after having entertained and taught it privately before that period. His "Commentary on true and false Religion," containing his sentiments on this subject, was published in 1525, and followed by a learned treatise of Œcolampadius on the same subject.

With a view of bringing this controversy, which reflected much discredit on the Protestant cause, to an amicable issue, Philip, landgrave of Hesse, invited, in 1529, to a conference at Marpurg, Luther and Zuingle, together with some of the other principal leaders of their respective parties; who disputed, during four days, in presence of the landgrave. Luther attacked Œcolampadius, and Melancthon disputed against Zuingle. Before they parted, the Swiss and German theologians signed their mutual assent to 14 articles, containing the essential doctrines of Christianity, and expressed a hope that their difference with respect to the real presence would not interrupt their harmony. The landgrave required from the two leaders a declaration that they would regard one another as brothers. Zuingle readily consented; but Luther would engage no farther than that, speaking of the Swiss, he would for the future moderate his expressions. In this conference Zuingle was accused of heresy, not only on account of his explication of the nature and design of the Lord's Supper, but also in consequence of the false notions he was supposed to have adopted relating to the divinity of Christ, the efficacy of the divine word, original sin, and some other parts of the Christian doctrine. But though he cleared himself to the satisfaction even of Luther from the greatest part of these accusations, their dissension concerning the manner of Christ's presence in the eucharist still remained. Nor did it terminate with the death of Zuingle in 1531, nor with that of Luther in 1546. Melancthon and Calvin made several attempts towards promoting a reconciliation between the contending parties. With this view Calvin proposed a system, with respect to the eucharist, more conformable to the doctrine of the Lutheran church than that of Zuingle. He acknowledged a spiritual presence of Christ in this sacrament, and supposed that a certain divine virtue or efficacy was communicated by Christ with the bread and wine to those who approached this holy sacrament with a lively faith, and with upright hearts; and to render this notion still more satisfactory, he expressed it in almost the same terms which the Lutherans employed in inculcating their doctrine of Christ's real presence in the eucharist. But whilst the followers of Zuingle asserted, that all Christians, without distinction, whether regenerate or unregenerate, might be partakers of the body and blood of Christ, Calvin confined this privilege to the pious and regenerate believer alone. Besides, the sentiments of the Zuinglians, with regard to the divine decrees, differed very little from that of the Pelagians; nor did they hesitate in declaring, after the example of Zuingle himself, that the kingdom of Heaven was open to all who lived according to the dictates of right reason; whereas Calvin maintained, that the everlasting condition of mankind in a future world was determined from all eternity by the unchangeable order of the Deity, and that this absolute determination of his will and good pleasure was the only source of happiness or misery to every individual. Moreover, Zuingle and Calvin differed in their notions of ecclesiastical government. The former ascribed an absolute and unbounded power, in religious matters, to the civil magistrate; allowing at the same time of a certain subordination among the ministers of the church, and placing at their head a perpetual president or superintendent, with a certain degree of inspection and authority over the whole body; but Calvin, on the contrary, reduced the power of the magistrate, in religious matters, within narrow bounds; declaring the church a separate and independent body, endowed with the power of legiflation for itfelf, and maintaining that it was to be governed, like the primitive church, only by prefbyters and fynods, *i. e.* by affemblies of elders, compofed both of the clergy and laity, and leaving to the civil magiftrate little elfe than the privilege of protecting and defending the church, and providing for what related to its external exigencies and concerns. Thefe and other circumftances prevented the union of the Lutheran and reformed churches; though in procefs of time almoft all the latter churches adopted the theological fyftem of Calvin. Mofh. Eccl. Hift. Eng. ed. 8vo. vol. iii. and vol. iv.

ZULAUF, in *Geography*. See SULAU.

ZULE, a town of South America, in the new kingdom of Grenada; 5 miles S. of Pamplona.

ZULIANA, a town of the republic of Ragufa; 30 miles W.N.W. of Ragufa.

ZULLICHAU, a town of the New Mark of Brandenburg, formerly in the duchy of Croffen. This town is the capital of a diftrict, or circle, and the feat of an ecclefiaftical infpection, fituated in a low plain, half a German mile diftant from the Oder, and about the fame diftance from the Ober. The town itfelf confifts only of 250 houfes, one parifh-church, and a grammar-fchool; but it has four large fuburbs: without the walls is a feat belonging to the king of Pruffia, fortified with walls and moats, which ferves for the refidence of the king's receiver of the prefecturate; in this part alfo ftands the Calvinift church. Zullichau contains a good woollen manufacture; 37 miles S.E. of Francfort on the Oder. N. lat. 52° 8′. E. long. 15° 45′.

ZULPHA, or JULFA, a town of Perfia, in the province of Irak, on the S. fide of the Zenderoud, about a mile and a half from Ifpahan, to which it is confidered as a kind of fuburb: it was built by Abbas I. after he had deftroyed Zulpha, in Armenia. In the year 1722 this town was taken by the Afghans, under Maghmud, who demanded of the inhabitants the fum of 70,000 tomans. This fuburb has been reduced from 12,000 to 600 families, which is the cafe with refpect to moft of the others; and a perfon may ride for miles amidft the ruins of the immenfe capital, Ifpahan, which neverthelefs ftill boafts of 200,000 fouls. In the fuburb of Julfa, there ftill remain nine churches, in which weekly fervice is performed.

ZULPHA, or *Julfa*, a town of Perfian Armenia, on the Aras or Araxes, fuppofed to be the ancient Arriammene. This town was taken and deftroyed by Abbas I., who removed the inhabitants to Ifpahan, where they built a fauxbourg, called *Zulpha*, containing 4000 houfes; fome families, neverthelefs, returned back to their native place, and took up their refidence among the ruins; 60 miles N. of Tauris.

ZULPICH, or ZULCH, a town of France. This town contains three churches, and feveral cloifters. In the year 406, Klodwig, king of the Franks, overcame the Alemanni near this place; 18 miles S.W. of Cologn. N. lat. 50° 43′. E. long. 6° 34′.

ZULTZ, or BIALA, a town of Silefia, in the principality of Oppeln, and capital of a circle; 20 miles S.S.W. of Oppeln.

ZULUCK, a fmall river of Ruffia, in the country of the Coffacks, which runs into the Kardai, near Baberezovfkaia.

ZULZ, a town of the Grifons, in Upper Engadine, on the Inn; 31 miles N.N.E. of Chiavenna.

ZUM BOIRS, a town of Germany, in the county of Bregentz, on the river Bregentz; 18 miles S.S.E. of Bregentz.

ZUM *Clofterlin*, a town of Germany, in the county of Pludentz, on the river Alfens; 9 miles E. of Pludentz.

ZUM *Hofts*, a town of Germany, in the county of Bregentz, on the river Bregentz; 15 miles S.S.E. of Bregentz.

ZUM *Stein*, a town of the duchy of Berg; 3 miles N.E. of Blankenberg.

ZUM *Vogelfang*, a town of France, in the department of the Roer; 3 miles S.E. of Juliers.

ZUM *Zontags*, a town of Germany, in the county of Bregentz; 24 miles S.S.E. of Bregentz.

ZUMAIA, or CUMAIA, a town of Spain, in the province of Guipufcoa, near the coaft of the bay of Bifcay; 14 miles W. of St. Sebaftian. N. lat. 43° 17′. W. long. 1° 51′.

ZUMAMPA, a town of South America, in the government of Tucuman, in the Rio Dolce; 90 miles S. of St. Yago del Eftero.

ZUMELLA, a town of Italy, in the Trevifan; 10 miles N.W. of Ceneda.

ZUMIC ACID, in *Chemiftry*, a name given by Dr. Thomfon to a peculiar acid principle lately obtained by M. Braconnot from rice, and which that gentleman had abfurdly called *Nanceic acid*, from *Nancy*, the name of the city where he refided.

This acid was obtained by fermenting rice in water by the application of a gentle heat. An acid liquor was obtained, which on evaporation to drynefs left a gummy mafs, having a very four tafte. This was digefted in alcohol, which on evaporation let fall cryftals compofed of the peculiar acid and lime. The lime was thrown down by barytes, and the barytes afterwards feparated by fulphuric acid, and thus the acid obtained in a feparate ftate.

Zumic acid is colourlefs, has a very acid tafte, and does not cryftallize. It precipitates none of the metals from their folutions, except zinc from very concentrated folutions of its falts.

With potafh and foda it forms incryftallizable deliquefcent falts, foluble in alcohol. With ammonia it forms a cryftallizable falt.

The neutral zumate of lime cryftallizes confufedly in a form fomewhat refembling a cauliflower. It is opaque, very white, has little tafte, and has the appearance of having efflorefced.

We do not think it neceffary to detail the properties of the other compounds of this acid, which have been but little examined, and appear to be totally devoid of intereft.

Dr. Thomfon thinks the zumic acid is the fame with the lactic acid, the latter being probably difguifed as ufually obtained, by the prefence of fome animal matter.

ZUMPANGO, in *Geography*, a town of Mexico; 90 miles S. of Mexico.

ZUMPANO, a town of Mexico; 20 miles N. of Mexico.

ZUNAC, a town of South America, in the audience of Quito; 30 miles N.W. of Macas.

ZUNAPA, a fmall ifland in the Adriatic. N. lat. 43° 7′. E. long. 17° 7′.

ZUNCOLO, a town of Naples, in Principato Ultra; 17 miles S. of Conza.

ZUNDEL, a town of Silefia, in the principality of Neiffe; 5 miles S.S.E. of Grotkau.

ZUNGER, a town of Pruffia, in Pomerelia, at the mouth of the Nogat; 8 miles W.N.W. of Elbing.

ZUNG-GAR, a town of Tunis, anciently called *Zuchara*. Here are the ruins of a temple, and an aqueduct erected for the purpofe of conveying water to Carthage; 48 miles S.W. of Tunis.

ZVORNICK.

ZVORNICK. See Zwornick.

ZUPU, a town of Circassia; 160 miles E. of Theodosia.

ZUR Gugel, a town of Prussian Pomerelia; 20 miles S.S.E. of Marienburg.

Zur *Osa*, a town of the duchy of Bremen; 5 miles S.S.W. of Bremervorde.

ZURA, a town of European Turkey, in Moldavia, on the Dniester; 22 miles E. of Orhei.

ZURARA, a town of Portugal, in the province of Entre Duero e Minho, at the mouth of the Ave, opposite Villa de Conde.

ZURBARAN, Francisco, in *Biography*, was a Spanish painter, born at Triente da Cantos, near Seville, in 1596. He was a disciple of Pablo Roclas, under whose tuition he acquired very considerable talent, and soon enjoyed a good reputation as an artist. He adopted the style of M. A. Caravagio, painting with great boldness, force, and truth. His first public work was painted for the convent of La Merced Calzada, from the history of S. Pedro Nolasco, by which he added much to his fame. There are many other works of his in the public edifices at Seville and Cordova, particularly in the Collegio di San Pablo. He was invited to Madrid about 1630, and was appointed principal painter to the king, and employed in the Buen Retiro, where he painted the Labours of Hercules. His productions may also be found in the Casa da Campo, and other royal palaces, as well as in private collections. Zurbaran died in 1662, aged 63.

ZUREITA, in *Geography*. See Zuweita.

ZURIC, or Zurich, a canton of Switzerland, and the first in rank, bounded on the N. by Swabia and the canton of Schaffhausen, on the E. by the Thurgau and the county of Toggenburg, on the S. by the cantons of Schweitz and Zug, and on the W. by the county of Baden. This canton is not unaptly called an epitome of all Switzerland, as containing in it hills, valleys, plains, corn-lands, vineyards, lakes, rivers, vegetables of all kinds, and whatever else is necessary to the support of life. Grain is cultivated all over the country; but it ripens later in the mountainous parts, where the air is coldest, than in the levels or sunny valleys. The hilly grounds in the E., W., and S. borders, afford a specimen of the fertile Alps, as abounding in cattle, milk, butter, and cheese; at first the wines have a tartness attending them, yet they improve by keeping; and, after lying some years in the cask, become smooth, pleasant, and wholesome. Fruits also are every where found in great plenty, and very good. The most remarkable minerals and fossils are, chalk, potters' earth of several sorts and colours, sulphur, and pit-coal; some mineral springs are likewise found. The proportion of grain to the other productions of the earth will appear from the following calculation: there are 217,424 acres, of 36,000 square feet each, laid out in grain, 14,466 in vines, 94,553 in meadows, 42,549 in pasturage, and 103,772 in forests. As sufficient corn is not produced for the interior consumption, the deficiency is chiefly supplied from Swabia. In order to prevent a scarcity of this material article, a public granary is maintained, at the expence of government, for grain at the common price; but in seasons of scarcity, it is sold considerably cheaper than it can be purchased at the market. The wine is mostly consumed in the country, and little of it is spared for foreign commerce. The canton contained, in 1784, 174,572 souls, including 10,500 in the capital: this large population, in proportion to the size of the canton, is owing to the trade of Zuric; as at least two-thirds of the inhabitants derive their livelihood by spinning thread and silk, and making linen for the manufactures of the town. The sovereign power resides exclusively in the burgesses of the town, consisting of about 2000; but a contracted disposition prevails in most of the states of Switzerland, so that they seldom confer the burghership. In Zuric, it is said, a new citizen has not been admitted for the last 150 years.

The burghers, beside the advantage of electing their magistrates, and of aspiring to the administration of affairs, enjoy the sole right of commerce; all strangers, and even subjects, being excluded from establishing manufactures in the city, or in any part of the canton.

The burghers of Zuric are divided into thirteen tribes; one of which is called Constaffel, or the tribe of nobles, although at present not absolutely confined to persons of that description: it enjoys the privilege of giving eighteen members to the Sovereign Council, and six to the Senate, whereas each of the other tribes only supply twelve to the former, and six to the latter.

The legislative authority is vested by the burghers in the Sovereign Council of two hundred; consisting, however, of two hundred and twelve members drawn from the thirteen tribes, and comprising the Senate, or Little Council. This Senate, composed of fifty members, including the two burgomasters, has jurisdiction in all causes civil and criminal: in civil cases, when the demand is of a certain importance, an appeal lies to the Council of two hundred; but in criminal affairs, their sentence is final, and, when once passed, there is no reversal or mitigation.

It is to be regretted, that in this republic, as in most other states of Switzerland, there is no precise code of criminal law. The Caroline, or code of Charles V., is ostensibly followed; but on account of its obsolete usages and extreme severity, the sentence is ultimately left to the discretion of the magistrates.

The power of the Senate, considered in a collective capacity, is very considerable: it judges finally in all criminal causes, has the care of the police, and supplies the principal magistrates. But as too great a power of individuals is dangerous in a republic, the members of this assembly are liable to be changed, and a revision or confirmation is annually made, in some instances by the Sovereign Council, in others by the particular tribes to which the senators belong. This annual revision is a great check to mal-administration, and at the same time prevents the Senate from gaining so great an influence as to be detrimental to the liberties of the people. A burgher is qualified to vote at twenty; is eligible into the Sovereign Council at thirty; and into the Senate at thirty-five. The canton of Zuric is divided into districts or bailiages, which are governed by bailiffs nominated by the Sovereign Council, exercising an authority subject to certain restrictions. The reformation was begun by Zuinglius, in the year 1517, in the town of Zuric; and in 1524, gained footing in the whole canton.

The militia of the canton amounted, in 1781, to 25,718 infantry, 1025 artillery, 886 dragoons, and 406 chasseurs; in all 28,235 effective men. The arsenal is well supplied with cannon, arms, and ammunition; and contains a reserve of muskets for 30,000 men. This canton had formerly a regiment and some companies in the service of France, a regiment in that of Holland, and some companies in the service of the king of Sardinia.

In ecclesiastical affairs the Senate is supreme: the canton is divided into fourteen districts, each governed by a dean, chosen by the synod, from three candidates proposed by the clergy of the diocese. The synod, composed of the whole clergy, and several assessors on the part of the Little Council, meets twice a year. The principal ministers and professors in in the town conſtitute, in conjunction with ſeveral magiſtrates and other aſſeſſors, deputed by the civil power, an eccleſiaſtical and academical council: to this committee the deans recur in all concerns, which ſeem to exceed their juriſdiction: it determines leſſer affairs, and refers caſes of importance to the Senate.

During the French revolution, the canton of Zuric, after a feeble reſiſtance, ſurrendered to the arms of the invaders; and the national aſſembly, which had been convoked, acceded to the new organization of the Helvetic conſtitution.

Zuric, a city of Switzerland, and capital of a canton of the ſame name, ſituated on a large lake, where the river Limmat is diſcharged, which divides it into two parts; ſuppoſed to have been built on the ſcite of the ancient Tigurum, which was deſtroyed by the Allemanni.

The environs are very delightful; an amphitheatre of hills gradually ſloping to the borders of the water, enriched with paſture and vines; dotted with innumerable villages, cottages, and hamlets; and backed on the W. by the Utliberg, a bold and gloomy ridge ſtretching towards the Albis, and that chain of mountains which riſes gradually to the Alps. Of the two parts into which the town is divided, the old part is ſurrounded with the ſame ancient battlements and towers which exiſted in the thirteenth century, and the ſuburbs are ſtrengthened by fortifications in the modern ſtyle, but too extenſive. The ditches, inſtead of being filled with ſtagnant water, are moſtly ſupplied with running ſtreams. The public walk is pleaſantly ſituated in a lawn, at the junction of the Limmat and the Sil, an impetuous and turbid torrent, which deſcends from the mountains of Einſidlin: two rows of lime-trees planted by the ſide of the Limmat, and following its ſerpentine direction, afford an agreeable ſhade in the heat of ſummer. The inhabitants are very induſtrious; and carry on with ſucceſs ſeveral manufactures: the principal are thoſe of linens and cottons, muſlins, and ſilk-handkerchiefs. The manufacturers do not in general dwell within the walls; but the materials are moſtly prepared, and the work is completed in the adjacent diſtricts. For this reaſon, Zuric does not exhibit the activity and numbers of a great commercial city. The environs, on the contrary, are ſo extremely populous, that perhaps few diſtricts in the neighbourhood of a town, whoſe population ſcarcely exceeds 10,000 inhabitants, contain within ſo ſmall a compaſs ſo many ſouls. The ſtreets are moſtly narrow; the houſes and public buildings accord more with plainneſs and convenience, than with the elegance and ſplendour of a capital. In 1780 the town contained 10,559 ſouls; but the population had decreaſed from the difficulty of obtaining the burgherſhip; whereas luxury and opulence had very conſiderably increaſed. In general, however, the manners of the inhabitants are ſimple. Dinner is uſually ſerved at twelve: in the afternoon the gentlemen aſſemble in clubs, or ſmall ſocieties, in the town during winter, and at their reſpective villas in ſummer. They frequently ſmoke, and partake of wine, fruit, cakes, and other refreſhments. The women, for the moſt part employed in their domeſtic occupations, or devoted to the improvement of their children, are not fond of viſiting. This reſerve, however, has much abated, and gives place to a more ſociable intercourſe. Such, however, is the prevalence of national habit, that a few families, which form a more agreeable mixture of company, are conſidered as differing from the eſtabliſhed cuſtoms, and are ſtill known by the name of the French Society. Sumptuary laws are well obſerved. Amongſt theſe, the uſe of a carriage in the town is prohibited to all ſorts of perſons except ſtrangers; and it is almoſt inconceivable, that in a place ſo commercial and wealthy, luxury ſhould ſo little prevail.'

Zuric was formerly an imperial city, and obtained from the emperor Frederick II. very conſiderable privileges; which were acknowledged and augmented by ſeveral of his ſucceſſors. The civil war between the magiſtrates and the people in 1335 nearly reduced the city to ruins; but the former being baniſhed, the citizens, in 1337, eſtabliſhed a new form of government, which was confirmed by the emperor Louis of Bavaria. The exiles, after ſeveral fruitleſs attempts, were at length re-admitted; but engaging in a conſpiracy againſt the citizens, were diſcovered and put to death. In conſequence of this execution, the nobles in the neighbourhood took up arms; and Zuric, after having ineffectually applied for aſſiſtance to the emperor Charles IV., formed an alliance with Lucerne, Uri, Schweitz, and Underwalden, and was admitted a member of their confederacy. This event happened in the year 1351. The four cantons yielded the pre-eminence to Zuric: a privilege it enjoys at preſent; being the firſt canton in rank, and the moſt conſiderable in extent, both of territory and power, next to Berne. In the ſame year, Zuric was aſſiſted by the four cantons againſt Albert, duke of Auſtria, who beſieged the town, and was repulſed with great loſs.

Zuric was the firſt town in Switzerland that ſeparated from the church of Rome, being converted by the arguments of Zuingle.

The charitable eſtabliſhments at Zuric are, the orphan-houſe, which is regulated with extreme attention and care; an alms-houſe for poor burghers; an hoſpital for incurables, and that for the ſick of all nations, which uſually contains between ſix or ſeven hundred patients; and the Allmoſen-Amt, or foundation for the poor: this excellent inſtitution puts out children as apprentices; and diſtributes money, clothes, and books of devotion to poor perſons, as well in the town, as in different parts of the canton, at the recommendation of the reſpective miniſters. Here is alſo a chirurgical ſeminary, formed by voluntary ſubſcriptions, to the ſupport of which, Dr. Rhan, an eminent phyſician, was a liberal contributor.

At Zuric public education is a concern of the ſtate, and under the immediate protection of government. The office of a profeſſor gives rank and eſtimation, and is often held by a member of the Senate and of the Great Council. The principal literary eſtabliſhments for the inſtruction of youth are, the Caroline college for ſtudents in divinity; *Collegium Humanitatis*, or the college for polite literature; and the ſchool of arts: the firſt has twelve profeſſors, the ſecond two, and the laſt ſeven. The learned languages, divinity, natural hiſtory, mathematics, and in ſhort every ſpecies of polite learning, as well as abſtruſe ſcience, is taught at a ſmall expence in theſe reſpective ſeminaries.

In conſequence of the peculiar attention paid by government, ſince the reformation, to the education of youth, Zuric has produced many perſons, who have diſtinguiſhed themſelves in all departments of literature: among theſe we may reckon Zuingle and Bullinger, Conrad Geſner, Hottinger, Simler, Spon, Scheutzer, Heidegger, Breitinger, Bodmer, Hirtzel, Solomon Geſner, and Lavater. For each of theſe diſtinguiſhed perſons, ſee our biographical articles.

Dr. Hirtzel was a learned phyſician, and deſervedly ſtyled the Swiſs Plutarch: he diſtinguiſhed himſelf, among various publications, by the Socrate Ruſtique, and by the lives of Sultzer and Heidegger. Leonhard Meiſter, profeſſor of hiſtory and morality in the ſchool of arts, deſerves mention, on account of his numerous and valuable publications, in all which he has diſplayed great zeal for the promotion of

literature,

literature, correctnefs of tafte, liberality of fentiment, and extenfive hiftorical and biographical knowledge. In his obfervations on fanaticifm and intolerance, he has forcibly evinced their dreadful effects on government and civil fociety by hiftorical facts, and approved himfelf an able writer in combating perfecution, and in repreffing the prevalent fpirit of fanaticifm.

The public library at Zuric contains about 25,000 volumes, and a few curious MSS., of which latter are, the original MS. of Quintilian, the Pfalms in the Greek tongue, written on parchment dyed of a violet colour, the letters being filver and golden, and the marginal reference red, fomewhat fimilar to the "Codex Argenteus" of Upfal, and fuppofed to have once formed a part of the "Codex Vaticanus," and feveral MSS. of Zuingle. Zuric is a diftrict 41 miles S.E. of Bâle, and 36 S.W. from Conftance. N. lat. 47° 18′. E. long. 8° 25′. Coxe's Travels in Switzerland, vol. i.

Zuric, a lake of Switzerland, fituated in the canton to which it gives name, about 10 leagues in length, and one in breadth, of an oblong form; and though not fo large as that of Conftance, more thickly ftudded with villages and towns. The adjacent country is finely cultivated, and well peopled; and the fouthern part of the lake appears to be bounded with the high ftupendous mountains of Schweitz and Glarus. The fcenery is picturefque, lively, and diverfified.

ZURIMACZOW, a town of Auftrian Poland; 22 miles S. of Luckow.

ZURITA, a town of Spain, in New Caftile, on the left bank of the Tagus; 48 miles N.E. of Toledo.

ZURITO, a town of Peru, in the diocefe of Cufco; 12 miles N.W. of Cufco.

ZURLINDEN, a town of Pruffia, in the palatinate of Culm; 18 miles E.N.E. of Thorn.

ZURMENTUM, in *Ancient Geography*, a town in the interior of Africa Propria, S. of Adrumetum. Ptol.

ZURNAPA, in *Zoology*. See Camelopardal.

ZURUPALCA, in *Geography*, a town of Peru; 44 miles S. of Potofi.

ZURZACH, a town of Switzerland, in the county of Baden, on the Rhine, chiefly celebrated for its fairs, at which great quantities of goods are fold by the merchants from Germany, France, and Italy; 25 miles E. of Bâle.

ZURZONZA, a town of Mexico, in the province of Mechoacan, fituated on an ifland in a lake; 20 miles W. of Mechoacan.

ZURZURA, in *Ancient Geography*, a town of Afia, in the Greater Armenia. Ptol.

ZUSAM, in *Geography*, a river of Bavaria, which runs into the Danube, oppofite Donauwert.

ZUSCHEN, a town of Germany, in the county of Waldeck; 4 miles N.W. of Fritzlar.

Zuschen, or *Zuchenau*, a town of Germany, in the duchy of Weftphalia; 5 miles S.W. of Medebach.

ZUSEL, a river of France, which runs into the Roer, at Sufteren.

ZUSMERSHAUS, a town of Bavaria, in the territory of Augfburg; 13 miles N.W. of Augfburg.

ZUSNIN, a town of Iftria; 11 miles N.N.E. of Pedena.

ZUTPHEN, a city of Holland, and capital of a county to which it gives name, fituated on the river Berckel, which paffes through the middle of it, fills its ditches, and immediately joins the Iffel. It takes its name from the two Flemifh words "Zudt Vunen," which fignify Southern Meadows. The principal buildings are, the church of St. Walburge, the town-houfe, the college of the deputies of the comté, and an ancient building, which they call "s'Graven-Hof," or Palace of the Comté. Otho I. of Naffau, acquired this country in the 11th century, by his marriage with the heirefs of Gerlach, count of Zutphen, fince which it has ever been annexed to Guelderland; 7 miles S. of Deventer. N. lat. 52° 10′. E. long. 6° 5′.

Zutphen *Iflands*, a group of fmall iflands, in the ftraits of Sunda. S. lat. 5° 50′. E. long. 105° 42′.

ZUTZ, a town of Switzerland, in the league of the Grifons, on the Inn. This town, though not the largeft, is reckoned the principal place of Upper Engadine, becaufe it contains the criminal court of juftice. This court confifts of the landamman of Sotto, one of the two communities of Upper Engadine, who is prefident, and fixteen jurymen, called Trouadors, taken equally from each diftrict. Juftice is faid to be more equitably adminiftered in this court than in any other throughout the Grifons, excepting at Coire. The vicinity of Zutz, and alfo of Scampf, is the fineft part of the valley of Engadine; it there produces fome rye and barley, and the mountains are clothed with verdure to their very fummits.

ZUURE-VELDT, a divifion of Graaf Reynet, which is an extenfive plain country, ftretching from the Sunday river, in Zwartkop's bay to the great Fifh river, and is the fame kind of good arable or pafture land as the plains of the Autiniequas divifion in Zwellendam; but it is now exclufively in the poffeffion of the Kaffers, from whom it was originally taken by the Boors. The great chafms towards the fea-coaft, that are filled with thickets, abound in elephants and buffaloes; and in the great Fifh river are, occafionally at leaft, found a few of the hippopotamus, or river-horfe.

ZUWEITA, or Zureita, a town of the Arabian Irak; 35 miles S.E. of Helleh.

ZUYDER-ZEE, or Zuider-See, a great gulf or bay of the German ocean, which extends from fouth to north, in the United Provinces, between Friefland, Overiffel, Guelderland, and Holland. It is fo called from its fituation towards the fouth, and is faid formerly to have been a lake, and that the land is fwallowed up that united North Holland with Friefland.

ZUZAN, a town of Perfia, in that part of Khoraffan which extends from N. lat. 32° 30′ to 34° 40′, and from 56° to 62° of E. long. It is the ancient "Sufa," now an inconfiderable place, fituated at the fame diftance from Pufhing as the latter is from Herat.

ZUZON, a town of Spain, in Old Caftile; 22 miles N.E. of Siguença.

ZUZYGIUM, in *Botany*. See Syzygium and Calyptranthes, to which latter genus belongs the original *Suzygium* of Browne.

ZWAMMERDAM, or Zwadenburgerdam, in *Geography*, a town of Holland, on the Rhine, which was pillaged and burned by the French, in the year 1762; 6 miles N. of Gouda.

ZWARTE-BERG, as well as *Cango* and *Trada*, are divifions of Zwellendam, which are the Karroo plains, fituated between the firft and fecond chains of mountains, but being well watered by the mountain ftreams contain fertile patches of ground. Their great diftance, however, from the Cape, and very bad roads, prevent an extenfive tillage. In thefe plains are numerous oftriches, and herds of quachas, zebras, and hartebeefts. Behind the firft chain of mountains, in thefe divifions, are two hot fprings of chalybeate water.

Zwarte-berg is alfo a divifion of Graaf Reynet, which is is a portion of the mountain of the ſame name, in the diſtrict of Zwellendam, to which it ought properly to belong. Sheep and horned cattle are the chief produce of the farmers.

Zwarte-kop's *River* is a fertile and extenſive diviſion of Graaf Reynet, lying to the ſouthward of Zwarte-Ruggens, and capable of producing an abundant ſupply of grain, convenient to be delivered at a trifling expence at the bay. About 15 miles to the weſtward of the bay are large foreſts of timber-trees, near which is an appearance of a rich mine of lead. Near the bay is alſo a ſalt lake, which yields a plentiful ſupply of that article. Wax from the myrica cerifera and aloes might be furniſhed by this diviſion as articles of commerce.

Zwarte-ruggens, a diviſion of Graaf Reynet, which is a ſtony tract of country to the ſouthward of Camdeboo, another diviſion lying at the foot of the ſnowy mountains. It is very ſcantily ſupplied with water, and produces little except ſucculent plants, among which are two or three ſpecies of euphorbia. Few families are found in this diviſion, but here and there in the neighbourhood of the Sunday river, which runs through it. The cattle and ſheep are ſmall, but generally in good condition.

ZWARTKOP's Bay. See Algoa *Bay*.

ZWARTLAND, East, and *Twenty-four Rivers*, are two diviſions of the diſtrict of Stellenboſch and Drakenſtein, conſiſting of widely-extended plains, ſtretching, in breadth, from the Berg river to the great chain of mountains, and to the Picquet Berg, in length, to the northward. Theſe are conſidered as the granaries of the colony. The crops, however, in Zwartland, are as uncertain as the rains, on which their ſucceſs almoſt entirely depends. In the Twenty-four rivers, the grounds may be irrigated by the innumerable ſtreamlets that iſſue from the great chain of mountains, in their courſe to the Berg river. Theſe form ſwamps, that have been productive of very fine rice. Wheat, barley, and pulſe, are the principal articles that are cultivated in thoſe two diviſions; but they have alſo plenty of fruit, and make a little wine for family uſe.

ZWELLENDAM, a tract of country in ſouthern Africa, which lies upon the ſea-coaſt between Breede river on the W., and Camtoos river on the E., and extends northerly to the ſecond chain of mountains, called the Zwarte-Berg, or Black mountains. The length is about 380 and breadth 60 miles, comprehending an area of 19,200 ſquare miles, which is occupied by 480 families, ſo that each family has, on an average, 40 ſquare miles of land. The population of Zwellendam, aſcertained on oath in the year 1798, conſiſted of 3967 Chriſtians, and 2696 ſlaves and Hottentots, making a total of 6663. The ſtock and produce comprehended 9049 horſes, 52,376 horned cattle, 154,992 ſheep, 220½ leggers of wine made, 16,720 muids of wheat reaped in 1797, and 10,554 muids of barley and rye.

Zwellendam, *Droſdy*, or village of, a diviſion of Zwellendam, ſituated at the foot of the firſt chain of mountains that runs E. and W., or parallel to the ſea-coaſt, and diſtant from Cape Town about 140 miles. It is compoſed of about 30 houſes, ſcattered irregularly over a ſmall but fertile valley, down the middle of which runs a plentiful ſtream of water. At the head of the valley ſtands the houſe of the landroſt, to which is annexed a large garden well ſtocked with a variety of fruits, and a ſpacious vineyard; the whole encloſed and planted with oaks and other trees. In the middle of the village a large church has been lately erected, which is the only place of worſhip in the whole diſtrict. The other diviſions of Zwellendam are, the country between the droſdy and Gauritz river, named according to the rivers that croſs it, Cango, Zwarte-Berg, Trada, Moſſel bay, Autiniequas land, Plettenberg's bay, Olifant's river, Kamnaaſic, Lange-Kloof, and Sitſikamma. Barrow's Southern Africa, vol. ii.

ZWENCKAU, a town of Saxony, in the principality of Merſeburg, on the Elſter. In the year 1429, this town was burned by the Huſſites; 5 miles S. of Leipſic. N. lat. 51° 14′. E. long. 12° 18′.

ZWENTENDORFF, a town of Auſtria; 6 miles W. of Tulln.

ZWERCHBACHLEIN, a river of Wurtemberg, which runs into the Nagold, near the town of Nagold.

ZWERNITZ, a town of the principality of Culmbach; 10 miles S.W. of Culmbach.

ZWERNTLDORFF, a town of Auſtria; 6 miles E. of Weikendorff.

ZWETHAN, a town of Saxony; 20 miles S.E. of Wittenberg.

ZWETL, a town of Auſtria, at the conflux of the Zwetl and the Kamp; 26 miles W.N.W. of Crems. N. lat. 48° 33′. E. long. 15° 7′.

Zwetl, a river of Auſtria, which riſes about four miles weſt from Weitra, and runs into the Kamp, at Zwetl.

ZWETZEN, a town of Thuringia; 3 miles N. of Jena.

ZWETZEY, a town of Croatia, on the river Mreſnitza; 12 miles S. of Sluin.

ZWEYBRUCKEN. See Deux-Ponts.

ZWEYDRITTELSTUCK, or *Piece of Two-thirds*, in *Commerce*, a ſilver coin in Germany, worth two-thirds of a rix-dollar of account.

ZWIAHEL, in *Geography*, a town of Ruſſian Poland; 90 miles E. of Luckow.

ZWICKAU, a town of Saxony, in Erzgebirg, on the Mulda. It has a citadel, three churches, and a Latin ſchool, in which is a good library: here is a manufacture of cloth, and another of cards, for the uſe of wool-combers; with a conſiderable inland trade; 38 miles S.S.E. of Leipſic. N. lat. 50° 39′. E. long. 12° 25′.—Alſo, a town of Bohemia, in the circle of Boleſlau; 4 miles W. of Gabel.

ZWIELAUKA, a town of Moravia, in the circle of Olmutz; 26 miles W. of Olmutz.

ZWIFALTEN, a princely abbey founded in the year 1089. In 1802, it was given among the indemnities to the duke of Wurtemberg; 58 miles W. of Augſburg. N. lat. 48° 17′. E. long. 8° 30′.

ZWINGENBERG, a town of Heſſe Darmſtadt, ſituated on the Bergſtraſſe. In 1693, the greater part of this town was deſtroyed by the French, ſince which it has been rebuilt in a better manner; 10 miles S. of Darmſtadt.

ZWINGENDORFF, a town of Auſtria; 2 miles S. of Laab.

ZWINGERA, in *Botany*, a genus taken from Aublet, dedicated under this name to the memory of ſeveral Swiſs botaniſts of the family of Zwinger, who for three generations have cultivated this ſcience at Baſil, chiefly, indeed, with a reference to the medical qualities of plants. Theodore Zwinger, profeſſor of anatomy and botany in that univerſity, who died in 1724, aged 67, publiſhed in 1696 a folio German Herbal, of 995 pages, with wooden cuts, borrowed from Geſner and Camerarius, which is little known out of his own country. Some botanical diſſertations alſo appeared under his preſidency. His ſon Frederick gave an enlarged edition of the above Herbal in 1744; and has publiſhed in the *Acta Helvetica*, v. 1. 50, a plate and deſcription of a very remarkable fungus, apparently belonging to

Peziza,

Peziza, but of which we find no notice taken by Perſoon. The NOLANA of Linnæus, (ſee that article,) was once publiſhed under the name of *Zwingera humifuſa*, by John Hofer, in *Act. Helvet.* v. 5. 267. t. 1, but this plant has had many names beſides.—Schreb. Gen. 802. Willd. Sp. Pl. v. 2. 569. Mart. Mill. Dict. v. 4. (Simaba; Aubl. Guian. 400. Juſſ. 373.)—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Terebintaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, ſmall, in five deep, ovate, acute ſegments. *Cor.* Petals five, oblong, obtuſe, ſpreading. *Stam.* Filaments ten, capillary, dilated and hairy at the baſe, ſhorter than the corolla; anthers ovate. *Piſt.* Germen ſuperior, ſeated on a glandular receptacle, roundiſh, with five deep furrows; ſtyle longer than the ſtamens, thread-ſhaped, ſtriated; ſtigmas five, ſimple. *Peric.* Capſules five, coriaceous, ovate, ſpreading, of one cell. *Seeds* ſolitary, ovate.

Eſſ. Ch. Calyx in five deep ſegments. Petals five. Filaments dilated and hairy at the lower part. Capſules five, coriaceous, ſeated on a fleſhy receptacle. Seeds ſolitary.

Obſ. The flowers are ſaid to be occaſionally only four-cleft and octandrous. This genus is not much akin, as Willdenow thought, to QUASSIA, but rather to CNESTIS (ſee thoſe articles); differing from the latter in having one *ſtyle* inſtead of five. How far their *fruits* correſpond, we know not enough of the ſeed-veſſel of *Zwingera* to determine.

1. Z. *amara.* Bitter Zwingera. Willd. n. 1. (Simaba guianenſis; Aubl. Guian. 400. t. 153.)—Native of the woods of Orapu in Guiana, bearing flowers and fruit in June. A *ſhrub*, not more than ſeven or eight feet high, whoſe *ſtem* is three or four inches in diameter, with a white ſoft wood. *Branches* numerous, alternate. *Leaves* alternate, ſtalked, either ternate, or pinnate, of two or three pair, with an odd one, of elliptic-lanceolate, pointed, emarginate, entire, ſmooth *leaflets*, the largeſt of which are three and a half inches long, and an inch, or more, in breadth. *Flowers* five or ſix together, in little axillary cluſters. *Petals* whitiſh, ſurrounding the green *diſk*. *Fruit* yellow; the inner rind green and bitter. Nothing is recorded concerning the qualities or uſes of this ſhrub.

ZWISEL, in *Geography*, a town of Bavaria, on the Regen; 42 miles E. of Ratiſbon.

ZWITTAU, or ZWITTAWA, a town of Moravia, in the circle of Olmutz; 30 miles N.W. of Olmutz. N. lat. 49° 43′. E. long. 16° 16′.

ZWITTAU, a river of Moravia, which riſes in the ſouth-eaſt part of Bohemia, and joins the Swarta, near Brunn.

ZWOL, or SWOL, a town of Holland, in the department of Overiſſel, ſituated on the river Aa, between the Iſſel and the Vecht, in the country of Zallant. It is a ſtrong place, well fortified, and ſurrounded with a double ditch, filled with the waters of the Aa. Its ſituation is very advantageous, on an eminence which commands the country, and is the ordinary paſſage from Holland to the provinces of Frieſland, Groningen, and Overiſſel. It was formerly a free and imperial city, and ranked among the Hanſe towns. The magiſtracy is compoſed of eight echevins, and eight common-council. The celebrated Thomas à Kempis, otherwiſe called Hamerken, was a regular canon in a priory of Auguſtines in this place, and died here in 1471, aged 91; 28 miles S.W. of Covorden. N. lat. 52° 32′. E. long. 6° 1′.

ZWOLFAING, a town of Auſtria; 8 miles S.S.E. of Vienna.

ZWONIGRAD, a town of Dalmatia, and capital of a diſtrict; 60 miles S.E. of Segna.

ZWONITZ, a town of Saxony, in the circle of Erzgebirg; 4 miles N.N.W. of Grubenhagen.

ZWORNICK, a town of Boſnia; 68 miles S.W. of Belgrade. N. lat. 44° 37′. E. long. 18° 50′.

ZWOTA, or TZWODA, a river of Bohemia, which runs into the Egra, near Falckenau.

ZYDACZOW, a town of Auſtrian Poland, in Galicia; 30 miles W.N.W. of Halicz.

ZYGÆNA, in *Ancient Geography*, an iſland in the northern part of the Arabic gulf. Ptolemy.

ZYGÆNA, in *Ichthyology*, a ſpecies of *ſqualus*, which ſee; called by Willughby *balance-fiſh*. See alſo SHARK.

ZYGASTICUM, Ζυγαστικον, formed of ζυγος, *a balance*, among the *Ancients*, money paid for weighing things.

ZYGER, in *Geography*, a river of Hungary, which runs into the Kyros, 5 miles W. of Boros Jeno.

ZYGES, in *Ancient Geography*, a people of exterior Libya, towards the coaſt of the Mediterranean ſea, W. of the Mareotide Nome. Ptolemy.

ZYGI, a people of Aſia, of the number of thoſe who inhabited the Cimmerian Boſphorus, between the Athæi and Heniochi. Strabo.

ZYGIA, in *Botany*, ζυγια of Theophraſtus, the ſecond kind of his σφενδαμνος, or Maple, remarkable for its yellow and veiny wood, is ſpoken of as a mountain-tree, but botaniſts have not aſcertained the preciſe ſpecies. Pliny's account of this matter is extracted and abridged from the above Greek author, but is not made at all more clear. He however ſeems to have been acquainted with a beautiful wood, of the Maple kind, which he ſays was compared to a peacock's tail, and grew chiefly in Iſtria and Rhœtia. Can this have been the *Acer Opalus* of modern authors? (See Willd. Sp. Pl. v. 4. 990.) Anguillara has long ago ſuſpected that tree, which Linnæus and many other botaniſts have ſtrangely overlooked, to have been the ζυγια of Theophraſtus. Its native country, and veined yellow wood, ſometimes very beautiful, are in favour of this opinion. De Theis, following Bodæus a Stapel, and other commentators on Theophraſtus, who are led by the obvious derivation of the name from ζυγος, *a yoke*, take the tree in queſtion for our *Carpinus*, whoſe hard and tough wood ſerves to make yokes for oxen. He ingeniouſly ſupports this opinion by the Celtic origin of *Carpinus*, from *car*, *wood*, and *pin*, *head;* and further by its Engliſh ſynonym, *Hornbeam*, oxen being yoked by their horns. The wood of the Carpinus, however, is neither yellow nor beautifully veined, and it is moſt probable ζυγια had ſome other origin, or alluſion. Robert Conſtantine, cited by Bodæus a Stapel, ſeems to confound the *Acer Opalus* with *Viburnum Opulus*, which he terms "the *Opulus* of Columella, a French ſhrub, uſed for bowers." This laſt has nothing in common with the hiſtory of the ζυγια.

Whatever may have been the ancient *Zygia*, Dr. Patrick Browne, finding this name unoccupied, has applied it to a Jamaica ſhrub, which appears to belong to *Mimoſa;* ſee Browne Jam. 279. t. 22. f. 3. Nor is this application ſo unſuitable as may ſeem at firſt ſight; for the author had evidently in his mind the yoked leaflets, to which he alludes in his ſpecific definition. We do not find that Linnæus, except in manuſcript, or any other author, has adopted this as a *Mimoſa*. Juſſieu, in his Gen. Pl. 366, ranges Browne's *Zygia*, with a few other genera, at the end of his *Leguminoſæ*, adding a reference to *Mimoſa Bourgoni*, Aubl. Guian. t. 358, as a ſimilar plant or genus. We do not ſee why it was

was not placed near *Mimoſa*, in the firſt ſection of that natural order. Swartz, Ind. Occ. 980, ſpeaks of Browne's figure of the flower of *Zygia*, as exactly like his own *Mimoſa comoſa*, Prodr. 85; but he adds that the plants are different, without any further elucidation of the former. There is no ſpecimen of *Zygia*, amongſt the plants in the Linnæan herbarium, collected by Browne, and ſent by Solander to Linnæus. In a manuſcript catalogue of Jamaica plants, in Dr. Browne's own hand, given to the writer of this article by A. B. Lambert, eſq., *Mimoſa Zygia* ſtands between *fagifolia* and *Unguis Cati*, with this remark, which is not in the author's Hiſtory of Jamaica, "*folia bijugata, ſive ſuſtentaculis bipartitis, ſingulis diphyllis.*" This plant is there called Yoke-wood. In the printed work it is denominated Horſe-wood, or Hoop-wood, the wood being "pretty tough, and ſometimes cut for hoops. The ſhrub is very common in St. Mary's, growing chiefly in low moiſt lands; but is ſometimes found in the mountains, where it commonly riſes to the height of ten or twelve feet, or better." Theſe are all the particulars we can gather relative to Browne's *Zygia*.

Zygia, in the *Inſtrumental Muſic of the Ancients*, a flute peculiar to weddings, according to Apuleius. (Metam. lib. iv.) The word *zygia* is a Greek adjective, which implies *nuptial*. The zygia was probably a double flute; for Julius Pollux (Onomaſt. lib. iv. c. 10.) ſays, "there was alſo a flute air for the wedding; executed on two flutes, one longer than the other."

Zygia, in *Entomology*, a genus of inſects belonging to the order of coleoptera, the characters of which are, that the antennæ are moniliform, the palpi unequal and filiform, the lip elongated and membranaceous, and the jaw unidentated. There is one ſpecies, *viz.*

Oblonga. Found in the Eaſt, oblong, red, with head and wing-ſheaths cyaneous.

ZYGIANA, in *Ancient Geography*, a country of Aſia Minor, in Bithynia. Ptolemy.

ZYGIS, in *Botany*, the ſpecific name of a ſpecies of Thymus, (ſee that article, n. 9,) ſuppoſed to be the ζυγις of Dioſcorides. De Theis, who writes this word ζιγις, without any authority that we can find, derives it from ζιγγος, *the hum of bees*, which is confirmed, apparently without his knowledge, by the modern Greek name of the ſame plant, σμαζι, *the delight of bees*. Such an appellation is peculiarly ſuitable to a plant well known to be highly grateful to thoſe inſects, and which is ſuppoſed to give its aromatic flavour to the famous honey of mount Hymettus, a ſpot where this *Thymus* abounds. Undoubtedly there are other ſpecies of the ſame genus, as well as of *Thymbra*, *Satureia*, &c., found in the ſame neighbourhood, which contribute to produce this flavour, in as powerful a degree perhaps as the above.

ZYGITÆ, in the *Roman Galleys*, a term uſed to expreſs thoſe rowers in the triremes, or three-rowed galleys, who ſat on the ſecond row, that is, above the thalamitæ, and below the thranitæ.

ZYGOMA, Ζυγωμα, in *Anatomy*, a bone of the head, otherwiſe called os jugale; or, it is the bony arch under which the temporal muſcle paſſes.

The word is formed from ζευγνυμι, *I join*; ſo that zygoma, properly ſpeaking, is the juncture of two bones. See Cranium.

ZYGOMATIC Process of the temporal bone and os melæ: the parts contributing to form the zygoma.

ZYGOMATICUM, Os, the cheek-bone, ſo called becauſe it contributes largely to the formation of the zygoma. See Cranium.

ZYGOMATICUS, *Major and Minor*, muſcles of the face, connected to the corner of the mouth. See Deglutition.

Zygomaticus is alſo an epithet given to the ſuture that binds the two proceſſes of the zygoma together.

ZYGOPHYLLUM, in *Botany*, ſo named by Linnæus, from ζυγος, *a yoke*, and φυλλον, *a leaf*, each leaf, of moſt of the ſpecies, being compoſed of a pair of leaflets, yoked, as it were, together, and ſomewhat reſembling the foliage of the garden bean, *Vicia Faba*; whence this genus obtained, from Dodonæus and Tournefort, the name of *Fabago*. Hence alſo aroſe its Engliſh appellation of Bean-Caper, given by Gerarde. *Fabago* was properly deemed inadmiſſible, being compounded of another name, though of one no longer in uſe as generic. We may obſerve moreover, that it conveys an erroneous idea; for the plant in queſtion does not "bear beans," but leaves, reſembling bean leaves.—Linn. Gen. 212. Schreb. 288. Willd. Sp. Pl. v. 2. 560. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 3. 39. Sm. Prodr. Fl. Græc. Sibth. v. 1. 273. Juſſ. 296. Lamarck Dict. v. 2. 441. Illuſtr. t. 345. Gærtn. t. 112. (Fabago; Tourn. t. 135.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Gruinales*, Linn. *Rutaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five ovate, obtuſe, concave, erect leaves. *Cor.* Petals five, dilated upwards, obtuſe, emarginate, rather longer than the calyx. Nectary of ten converging, pointed leaves, or ſcales, ſometimes divided, embracing the germen, each of them attached to one of the filaments near its baſe. *Stam.* Filaments ten, awl-ſhaped, attached to the outſide of the nectary, ſhorter than the corolla; anthers oblong, incumbent. *Piſt.* Germen ſuperior, oblong, tapering at the baſe; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma ſimple. *Peric.* Capſule oblong, or roundiſh, with five angles and five intermediate furrows, five cells and five valves, the partitions linear, from the middle of each valve. *Seeds* ſeveral, roundiſh kidney-ſhaped, inſerted alternately, in two rows, into the middle of the valves.

Obſ. Linnæus remarks, that the ſeed-veſſel differs in ſhape in the different ſpecies, and that in ſome the flowers are four-cleft and octandrous. Schreber records an obſervation of Reichard, merely taken from the *Mantiſſa* of Linnæus, that Z. *album* has five *ſtigmas*; but we do not find this to be correct. Our fifteenth ſpecies is ſaid to have five diſtinct *ſtyles*.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectary of ten ſcales, embracing the germen, and bearing the ſtamens. Capſule of five cells, ſuperior.

The plants of this genus are, for the moſt part, ſhrubby, with ſimple or twin *leaves*, (rarely ternate or pinnate,) which are oppoſite, moſtly ſtalked, entire, often fœtid, of a thick or ſucculent texture, accommodated to the dry and ſunny ſituations where the greater part of the ſpecies grow. A very few are found in South America, or Guinea; the reſt are natives of Syria, Arabia, Siberia, and eſpecially of ſouthern Africa, about the Cape of Good Hope. The *flowers* are ſolitary, axillary, yellow, white, or reddiſh, often brilliant and rather handſome. The *ſeed-veſſel*, though anſwering in general to the above deſcription, which is made from Z. *Fabago*, is variouſly ſhaped in the different ſpecies, and in ſome appears to be lined with a ſort of horny elaſtic coat, analogous to the tunic of the *ſeeds*, ſo remarkable in the genuine *Rutaceæ*. Such is the caſe in Z. *microphyllum*, the

the edges of whose inflexed valves seem to constitute the partitions; yet the cells do burst at the outer margin, as well as at the inner. Willdenow defines fourteen species, which we shall find a necessity of extending to sixteen.

1. Z. *simplex*. Cylindrical-leaved Bean-Caper. Linn. Mant. 68. Willd. n. 1. (Z. portulacoides; Forsk. Ægypt.-Arab. 88. Ic. t. 12. f. B.)—Leaves simple, sessile, cylindrical.—The most common of all plants in the driest parts of the deserts of Arabia, where it is known by the name of *Garmal*, and esteemed by the Arabs very good for removing specks in the eyes, for which purpose the bruised leaves are applied, mixed with water. For this we have the authority of Forskall, who sent seeds to Linnæus. These vegetated at Upsal, but the plants did not live to produce flowers. The *root* is simple, tapering, apparently annual. *Stem* prostrate, repeatedly forked, round, smooth. *Leaves* sessile at each joint, spreading, an inch long, obtuse, somewhat dotted. *Flowers* yellow, quarter of an inch in diameter, almost sessile. *Petals* round, with long claws.

2. Z. *cordifolium*. Heart-leaved Bean-Caper. Linn. Suppl. 232. Willd. n. 2. Thunb. Prodr. 80. Ait. n. 1. —Leaves simple, sessile, opposite, roundish, somewhat heart-shaped.—Gathered by Thunberg, at the Cape of Good Hope, from whence it was sent by Mr. Masson to Kew garden, in 1774. This is a green-house *shrub*, flowering in October. We have seen no specimen.

3. Z. *Fabago*. Common Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 3. Ait. n. 2. (Capparis Fabago; Dod. Pempt. 747. Ger. Em. 897. Besl. Eyst. æstiv. ord. 10. t. 1. f. 1. C. leguminosa; Lob. Ic. v. 2. 58. Fabago Belgarum; Dalech. Hist. 456. Telephium Dioscoridis; Column. Ecphr. 132. t. 131. Morgsani; Rauw. It. t. 113.) —Leaves conjugate, stalked; leaflets obovate. Calyx smooth. Petals entire. Capsule oblong. Stem herbaceous. —Native of Syria, Persia, Barbary, &c. A hardy, but not common, herbaceous perennial in our gardens, flowering in autumn, cultivated by Gerarde, in 1596, and seen a few years afterwards, in the garden of cardinal Aldobrandini, at Rome, by Fabius Columna, who took this plant for the *Telephium* of Dioscorides, and has left us a most faithful representation of it, too much neglected by Linnæus and recent authors, who only refer to Dodonæus. Whether Columna erred or not with respect to the name, the reader will judge by consulting the article TELEPHIUM. The *root* is tapering, fleshy, producing from its crown several spreading, alternately branched, leafy, round, herbaceous, smooth *stems*, one and a half or two feet high. *Leaflets* an inch long, entire, smooth, green, unequal at the base, furnished with a principal rib, and one or two smaller ones. *Footstalks* rather shorter than the leaflets, swelling upwards, smooth, channelled, crowned with a small, intermediate, awl-shaped point, like an abortive leaflet. *Stipulas* between the footstalks, in pairs, membranous, ovate, pointed, oblique. *Flowers* yellow, on simple, axillary, opposite, nearly upright stalks, hardly so long as the footstalks. *Calyx-leaves* concave, quarter of an inch long, green, even, with a membranous edge. *Petals* rather longer, obtuse. *Nectaries* jagged, almost pectinate. Five of the *stamens* deflexed, five ascending. *Capsule* above an inch in length. *Seeds* numerous.

4. Z. *fœtidum*. Fœtid Bean-Caper. Schrad. Sert. Hannov. 17. t. 9. Willd. n. 4. Ait. n. 3. (Z. insuave; Curt. Mag. t. 372.)—Leaves conjugate, stalked; leaflets obovate. Calyx downy. Petals jagged. Capsule roundish. Stem shrubby.—Native of the Cape of Good Hope, from whence it was introduced in 1790, by Mr. Masson. This is a hardy green-house shrub, flowering all summer long, but rendered undesirable by the strong fox-like scent of its *leaves*, resembling that of the Crown Imperial, and peculiarly offensive when the house is either shut up, or warmed by the sun. The shrubby *stem* distinguishes this species from the last; but the short, roundish, or obovate, *fruit*, and jagged *petals*, which are five times the length of the calyx, and marked with a red spot at the base of their limb, afford essential marks of difference. *Z. retrofractum* of Thunberg, cited with a mark of doubt by Willdenow, has no resemblance to either.

5. Z. *maculatum*. Spotted-flowered Bean-Caper. Ait. ed. 1. v. 2. 60. ed. 2. n. 4. Willd. n. 5.—"Leaves conjugate, stalked; leaflets linear-lanceolate."—Native of the Cape of Good Hope, from whence it was introduced, in 1782, by George Wynch, esq. A green-house shrub, flowering in October and November. The *petals* are yellow, with a red heart-shaped spot, at the base of each, above which, in the three upper ones only, is a transverse red line. *Aiton.*

6. Z. *coccineum*. Scarlet-flowered Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 6. (Z. desertorum; Forsk. Ægypt.-Arab. 87. Ic. t. 11. Fabago arabica teretifolia, flore coccineo; Shaw Afric. n. 231. f. 231.)—Leaves conjugate, on a fleshy stalk; leaflets cylindrical, smooth. Capsule oblong.—Plentiful in the arid valleys of the desert, between Cairo and Suez. The Arabs call this plant *Rottræjt*. All kinds of cattle, even the camel, refuse to eat it. *Forskall.* The *stem* is shrubby, ascending, much branched, often a foot and a half high. *Leaflets* half or three-quarters of an inch long, obtuse, thick and succulent, quite smooth, supported in pairs on a club-shaped *footstalk*, somewhat more in length. *Petals* red, pointed. *Capsule* near an inch long. The shape of the *capsule* and *leaflets*, not to mention the colour of the *flowers*, distinguishes this species from the following.

7. Z. *album*. White Bean-Caper. Linn. Sp. Pl. 551. Mant. 379. Willd. n. 7. Ait. n. 5. Linn. fil. Dec. 1. 11. t. 6. Sm. Fl. Græc. Sibth. t. 371, unpublished. (Z. proliferum; Forsk. Ægypt.-Arab. 87. Ic. t. 12. f. A.)—Leaves conjugate, on a fleshy stalk; leaflets obovate, downy and hoary. Capsule roundish, five-lobed.—Native of Egypt, Cyprus, Barbary, &c. Forskall found it very abundantly about Alexandria; and Desfontaines near Tripoli, as mentioned by Shaw. Mr. Masson met with it in the Canary islands, and sent plants or seeds to Kew, in 1779, where this species is said to be kept in the dry stove, but not yet to have flowered. The *stem* is woody, diffuse, much branched, and very leafy. *Leaves* opposite, or aggregate, being accompanied by axillary tufts of smaller ones. The *leaflets*, as well as their *footstalk*, are thick, round, and juicy, both hoary, like the young *branches*, with fine, short, dense pubescence: the former are obovate, or almost globular, seldom a quarter of an inch long: the *footstalk* twice as much, and club-shaped. *Flowers* a third of an inch broad. *Calyx* reddish. *Petals* white, obtuse, crenate. *Germen* roundish, depressed, downy, with five rounded lobes. *Capsule* of the same shape; its coat, according to Forskall, pulpy, and there are only two *seeds* in each cell. The *stigma* is represented, in Mr. Ferdinand Bauer's drawing, rather slightly notched, not simple, as described by the younger Linnæus; but still less can we discern the five acute *stigmas*, mentioned in the *Mantissa*.

8. Z. *Morgsana*. Four-leaved Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 8. Ait. n. 6. (Fabago capensis frutescens major; Dill. Elth. 142. t. 116. f. 141. F. triphylla et tetraphylla, flore quadripetalo, fructu membranaceo quadrangulari; Burm. Afric. 7. t. 3. f. 2. Planta africana

frutescens,

frutescens, portulacæ folio, *Morgsani* syrorum, ex brevi pediculo binis; Pluk. Amalth. 173. t. 429. f. 4.)—Leaves conjugate, nearly sessile; leaflets obovate, flat, smooth. Stem shrubby. Capsule roundish, tumid, five-lobed.—Native of the Cape of Good Hope. A green-house shrub in England, flowering most part of the summer. *Aiton.* The *branches* are somewhat quadrangular, very smooth. *Leaflets* an inch long, succulent, but not tumid; their common *footstalk* very short, or altogether wanting. *Stipulas* in pairs, lanceolate, pointed, reflexed. *Flower-stalks* the length of the leaves, unilateral, in pairs, declining. *Flowers* large, yellow, turning white in decay; their *petals* obovate, entire, streaked with purple at the base. *Nectaries* jagged or fringed, as in n. 3, 4, and perhaps some other species. *Capsule*, as represented by Burmann, an inch in diameter, globose, with five large, rounded, prominent lobes. We find the *petals* uniformly five, and entire; Linnæus says four, rarely five, and somewhat emarginate. There is reason to believe he confounded more than one species under the present. He has applied a specific name, which properly belongs to *Z. Fabago*.

9. Z. *sessilifolium*. Sessile-leaved Bean-Caper. Linn. Sp. Pl. 552. Willd. n. 10. Ait. n. 7. (Fabago capensis frutescens minor; Dill. Elth. 142. t. 116. f. 142. F. humilis quadrifolia glabra, flore albido fructu rotundo; Burm. Afric. 4. t. 2. f. 1. F. africana arborescens, flore sulphureo, fructu rotundo; Commel. Rar. 10. t. 10.)—Leaves conjugate, sessile; leaflets obovate, flat, smooth. Stem shrubby. Capsule globose, undivided.—Native of the Cape of Good Hope. A green-house shrub, flowering in July and August, which appears to have been known in our gardens for above a century. Its size is inferior to the last, from which, according to Dillenius and Burmann, this species is essentially distinguished by the *fruit*. The *capsule* is either exactly globular, or, as Dillenius says, depressed like a Dutch cheese, its diameter not half an inch, nor is it furrowed, nor parted into large tumid lobes, like *Z. Morgsana*. The *leaves* too are smaller, and more perfectly sessile. Linnæus defines them "rough-edged," which we can find nothing to countenance, even in his own specimen. The *flowers* are drooping, orange-coloured, turning white as they fade; the *petals* crenate at the end, not much spreading. The *nectaries* are smaller, and much less conspicuously jagged than in the preceding.

10. Z. *fulvum*. Tawny Bean-Caper. Linn. Sp. Pl. ed. 1. 386. (Z. sessilifolium β; Linn. Sp. Pl. ed. 2. 552. Willd. n. 10, β. Fabago flore luteo, petalorum unguibus rubris, fructu sulcato oblongo acuto; Burm. Afric. 6. t. 3. f. 1.)—Leaves conjugate, sessile; leaflets obovate, flat, smooth. Stem shrubby. Capsule ovate, five-angled, acute.—Native of the Cape of Good Hope. Linnæus latterly considered this as a variety of the last, but we cannot discover on what his opinion was founded, there being nothing in his herbarium to represent *Z. fulvum*. There is indeed a specimen, referred by him at one time to *Z. Morgsana*, and at another to *coccineum*, on which, having no affinity to the latter, we are led to suspect he wrote *coccineum* by accident for *fulvum*. In this the *leaves* have something of a common *footstalk*, though very short. The *nectaries* are long and jagged, as in *Morgsana*. There is unluckily no *fruit*. Burmann's figure of the *capsule* is so precise, that, considering the analogy of other species, so well distinguished by this part, we can have no hesitation in re-establishing *Z. fulvum*, as essentially differing from *sessilifolium*, whether our specimen be what Linnæus intended or not. The *capsule* of the real plant is above an inch long, with five acute angles, and as many deep intermediate channels, and terminates in a point, being equally unlike *sessilifolium* on one hand, and *Morgsana* on the other.

11. Z. *spinosum*. Spinous Bean-Caper. Linn. Sp. Pl. 552. Mant. 380. Willd. n. 11. (Fabago tenuifolia spinosa, fructu rotundo; Burm. Afric. 5. t. 2. f. 2.)—Leaves conjugate, sessile; leaflets linear, fleshy, smooth; flat above. Stem shrubby. Permanent stipulas hooked, spinous.—Native of the Cape of Good Hope. The *stem* is bushy, shrubby, about a foot high, branched from top to bottom; the branches acutely quadrangular. *Leaves* numerous, fleshy like those of a *Sedum;* the *leaflets* acute, scarcely an inch long, blunt, with a small point; their under side convex, or hemispherical. *Stipulas* in pairs, small, lanceolate, spreading, at length becoming hardened, hooked, and pungent, so as to form two, three, or four prickles at every joint. *Flowers* drooping, large and handsome, on longish, solitary, lateral stalks. *Calyx* reddish. *Petals* yellow, fading to white, nearly or quite entire. *Nectaries* entire, not fringed. *Capsule*, according to Burmann, "round, smooth, compressed, terminating in the very acute *style*."

12. Z. *microphyllum*. Small-leaved Bean-Caper. Linn. Suppl. 232. Willd. n. 9. Thunb. Prodr. 80.—Leaves conjugate, somewhat stalked; leaflets inversely heart-shaped, smooth. Stem shrubby, with ascending branches. Capsule roundish, abrupt, of five compressed lobes. Style permanent.—Gathered by Thunberg, at the Cape of Good Hope. This is one of those hard, rigid, small-leaved, much branched *shrubs*, so characteristic of the botany of its native country. The *branches* are round, knotty, spreading, slightly hoary, or glaucous. *Leaflets* from one to three lines long, thick, oblique, sometimes obovate, but more frequently cloven, so as to become inversely heart-shaped; they are supported on a manifest, though short, thick *footstalk*. *Stipulas* minute. *Flower-stalks* thread-shaped, solitary, longer than the leaves, from the same buds. *Flowers* drooping, rather small, yellow. *Calyx* reflexed. *Capsule* the diameter of a pea, consisting of five rounded, vertical, compressed lobes, crowned with the spinous style, their surface rather reticulated: each of them bursts at the inner, as well as outer, edge into two elastic, or cartilaginous, valves, coated with a thin skin.

13. Z. *retrofractum*. Recurved Bean-Caper. Thunb. Prodr. 80.—Leaves conjugate, stalked; leaflets obovate, smooth. Stem shrubby, with spreading recurved branches. Flower-stalks shorter than the leaves.—Gathered at the Cape of Good Hope, by professor Thunberg, from whom we have a specimen. His short specific character was Willdenow's only guide, when the latter reduced this plant to *Z. fœtidum*, to which it has no affinity, and very little resemblance. The present, though a very distinct species, is most allied to *Z. microphyllum*, but the long, spreading, deflexed *branches* afford a characteristic difference of habit. The *leaflets* too are smaller, and seem to be always obovate, not obcordate. *Flowers* very small, their little thick *stalks* hardly so long as the *calyx*. *Nectaries* lanceolate, entire. *Germen*, after the other parts of the flower are fallen, elliptic-oblong, deeply five-lobed, acute, crowned with the style; but we have none in an advanced state, to enable us to judge whether the lobes ever extend into a rounded semi-orbicular shape, like the last, as may very probably be the case.

14. Z. *æstuans*. Surinam Bean-Caper. Linn. Sp. Pl. 552. Willd. n. 12.—Leaves conjugate, sessile; leaflets obovate, abrupt. Stems herbaceous, diffuse. Stipulas five at each joint.—Gathered in Surinam by Rolander, who sent seeds to Linnæus; but the plants raised from them

died without flowering. The *ftems* are a foot long, fmooth, roundifh, except a flatnefs on the upper fide. *Leaves* oppofite, without veins. *Stipulas* reflexed; two between each pair of leaves, at the uppermoft fide of the ftem; one between the fame pair, on the lower fide; one between the leaflets of each leaf. *Linnæus*. This laft feems to anfwer to the little point, or rudiment of a leaflet, which occurs in feveral others of the broad-leaved fpecies.

15. Z.? *lanatum*. Woolly-jointed Bean-Caper. Willd. n. 13.—"Leaves ternate; leaflets papillary beneath. Styles five. Stem zigzag, woolly at the joints."—Native of Sierra Leone. A plant of a doubtful genus, feen by the above author in a dried ftate only. The *ftem* appears herbaceous, round and fmooth, except the joints, which are remarkably woolly. *Leaves* oppofite, fmall, on *footftalks*. *Leaflets* three, on very fhort partial *footftalks*, roundifh, tapering at the bafe, pointed at the end; fmooth on the upper fide; befet underneath with prominent points. *Flower-ftalks* axillary, folitary, fingle-flowered, erect; drooping after flowering. *Calyx* of five linear, obtufe leaves; downy on the infide, and at the edges. *Corolla* not prefent; perhaps fallen. *Filaments* but little dilated at the bafe. *Germen* club-fhaped. *Styles* five, long, and thread-fhaped. *Stigmas* obtufe. *Capfule* ovate, with five angles, five cells, and five valves with keel-like edges, burfting at the bafe. *Seeds* folitary. *Willdenow*. The ternate *leaves* afford a ftrong prefumption againft this being a *Zygophyllum*, and the want, as it feems, of *nectaries*, with the five *ftyles*, decide the queftion, in our judgment. Not having feen the plant, we leave it here for further inquiry.

16. Z. *arboreum*. Tree Bean-Caper. Jacq. Amer. 130. t. 83. Linn. Sp. Pl. 1673. Willd. n. 14.—Leaves abruptly pinnate. Stem arboreous.—Native of South America. Found by Jacquin, in uncultivated valleys about Carthagena, as well as in woods on the fandy fea-fhore, flowering in July. A very handfome *tree*, forty feet high; the *trunk* being about fix feet; the *head* denfe, widely fpreading, and extremely ornamental; the *branches* oppofite, or forked. *Leaves* very numerous, oppofite, four inches long, of about feven pair, without a terminal one, of alternate, feffile, elliptic-oblong, obtufe, entire, fmooth, fhining *leaflets*, an inch or more in length. *Clufters* axillary and terminal, fhorter than the leaves, compound, lax, generally forked. *Flowers* large and handfome, without fcent. *Calyx* yellowifh-green, fmooth. *Petals* orange-coloured, roundifh, emarginate; their claws as long as the calyx. *Nectary* fringed; its fcales gradually larger towards the upper fide of the flower. *Stamens* erect, converging. *Germen* tapering at the bafe, into a long, thick, five-furrowed ftalk. *Capfule* with five large membranous lobes. When it bloffoms this tree affords a moft magnificent fpectacle, from the innumerable flowers, covering the bright green leafy head. Before the inflorefcence appears, the leaves might incautioufly be fuppofed doubly pinnate. The inhabitants give the name of *Guay-acan* to this tree, which is a general appellation for all kinds of hard wood that is ufeful for cabinet or other work. The trunk is reported to become changed into ftone by lying in the earth, being incapable of corruption. *Jacquin*.

Zygophyllum, in *Gardening*, comprifes plants of the herbaceous and woody fucculent exotic kind, among which the fpecies are, the common bean-caper (Z. Fabago), the African bean-caper (Z. feffilifolium), the purflain-leaved Ethiopian bean-caper (Z. Morgfana), the thorny bean-caper (Z. fpinofum), and the white Egyptian bean-caper (Z. album).

The firft has a deep flefhy root, and foft herbaceous ftalks, which decay in the winter.

The fecond is of a fhrubby growth, and there are varieties, with yellow flowers, with fulphur-coloured flowers, with white flowers, with copper-coloured flowers, having moftly a reddifh or brown fpot near the bafe of each petal.

The third has alfo a fhrubby ftem, and there is a variety with flame-yellow-coloured flowers.

And the fourth has an under fhrubby growth.

Method of Culture.—The firft fort is raifed from feeds, which fhould be fown in the fpring in pots filled with light fandy mould, or on a hot-bed. When the plants have a few inches growth, they fhould be removed into feparate pots, plunging them into a hot-bed, admitting air fo as gradually to harden them to the open ground. They fhould be protected for a winter or two, and then be turned out into borders, or other parts, where the fituation is warm, and the foil dry and rubbifhy, as they are of a fucculent nature.

The other forts are capable of being increafed by cuttings and feeds; the cuttings fhould be planted out in the fpring or fummer in pots filled with light fandy mould, and plunged in a hot-bed, being occafionally watered, when they quickly emit roots, and fhoot at top; and when fown in the fummer months, they may be planted in a fhady place, or in pots placed in the fhade, giving frequent waterings, when they will alfo take good root. In either method, they fhould be potted off feparately towards autumn, in order to be moved into the green-houfe or glafs-cafe in the beginning of autumn.

The feed fhould be fown in the fpring in pots of light earth, and be plunged in a hot-bed, where they foon come up: when a little advanced in growth, they fhould be pricked out in feparate fmall pots, being watered and re-plunged into the hot-bed till well-rooted, when they fhould be gradually hardened to the full air, and in June fet out to remain till the autumn, when they fhould be placed in the green-houfe, or fome other place, where they may have protection for the winter.

The firft fort affords variety in the borders, as well as among other potted plants; and the others in collections of the green-houfe kind.

ZYGOPOLIS, in *Ancient Geography*, a town of Afia, in the Colchide, near the town of Trapezunte.

ZYGOSTATES, among the *Ancients*, an officer who was the overfeer of weights, and was to take care that tradefmen ufed none but what were juft.

ZYGRIS, in *Ancient Geography*, a town on the coaft of the nome of Lybia; and *Zygritæ* are the people who inhabit this nome.

ZYMAR, a name given by fome of the chemical writers to verdigrife.

ZYME, a word ufed by many authors to exprefs ferment or leaven.

ZYMOLOGY, in *Chemiftry*, a term ufed by fome writers to exprefs a treatife on fermentation, or the doctrine of fermentation in general.

Mr. Sympfon has written a treatife on this fubject, in which he refers the whole to the internal conflicts of acid and fulphur in bodies, and feems to think that the phenomena of hot-baths, the generation of minerals, and the production of mineral waters, the grand appearances of light, heat, and fire, and the generality of the fubterranean phenomena of damps, earthquakes, and fiery eruptions, and the appearance of meteors, may be all explained by the doc-

 trine

trine of fermentation, eftablifhed on this bafis. Sympfon's Zymol. Chym.

ZYMOSIMETER, formed from ζυμωσις, *fermentation*, and μετρον, *meafure*, an inftrument propofed by Swammerdam, in his book "De Refpiratione," wherewith to meafure the degree of fermentation occafioned by the mixture of different matters; and the degree of heat which thofe matters acquire in fermenting; as alfo the heat, or temperament, of the blood of animals.

ZYMOSIS, a word ufed by fome to exprefs fermentation, and by others for a flatulent tumour of the liver, or other of the vifcera.

ZYMUM, in *Botany*, apparently from ζυμη, *a ferment*, a name which, De Theis fays, is given to a plant of the Mauritius, by Norôna, a Spanifh botanift, but without any explanation of its meaning, or application. This name is, neverthelefs, retained by Aubert du Petit-Thouars, in his *Plantes des Ifles d'Afrique*, fafc. 4.

ZYORY, in *Geography*. See SOHRAU.

ZYPE, a kind of ifland of North Holland, formed by canals cut from the Zuyder Zee to the German ocean. It was formerly a morafs, but is now converted into rich meadow land. On this fpot the duke of York was pofted, when he made terms with the French general Brune to evacuate Holland; having it in his power, by taking up the fluices, to inundate the country.

ZYRAS, in *Ancient Geography*, a river of Thrace, which watered the town of Dionyfiopolis. Pliny.

ZYRMA, a town of Thrace, near which ran the river Hebrus. Ptolemy.

ZYTHOGALA, formed of ζυθος, *cerevifia*, and γαλα, *lac*, *beer poffet*, a drink recommended by Sydenham, as good to be taken after a vomit, for allaying the acrimonious and difagreeable tafte it has occafioned, as well as to prevent gripes. Syden. Obferv. de Morb. acut. p. 39.

ZYTHUM, or ZYTHOS, a fort of malt liquor, in ufe among the ancient Germans.

Matthiolus reprefents the ancient *zythum*, and *curmi*, as the fame with our beer and ale.

ZYTOMIERS, in *Geography*, a town and fortrefs of Ruffian Poland; 65 miles W. of Kiev. N. lat. 50° 16′. E. long. 28° 54′.

ADDENDA & CORRIGENDA.

Vol. I.

AAM. To that article subjoin, see Stekan and Vat.

AARON, or Harun. See Bagdad. Add, and Almansor.

Aaron *Aarischon*. Insert in the third line, after probably, as some say, but according to others, not, &c.

ABACUS, in *Architecture*, l. 23, *dele* Corinthian and Composite.

ABADIOTS. See Candia.

ABANDONMENT, in *Commerce*, the act of relinquishing or surrendering goods to creditors and underwriters, either in lieu of a debt, or to avoid the payment of charges.

Abandonment, in *Marine Insurance*. See Risk and Recapture.

ABASCIA and Abassa. In the reference *r.* Abkhas for Abhkas.

ABASSI. For Gombroon *r.* Gambron.

ABBEVILLE, l. 4 and 5, *r.* containing, in 1811, 21,156 inhabitants, of whom 6672 are slaves.

ABBEYBOYLE. After abbey, insert see Boyle, and *dele* lat. and long.

ABBOT, George, 2d col. l. 4 from the bottom, instead of 1723-4 *r.* 1623-4.

ABBUTALS. See Abuttals.

A, B, C, DARIA, in *Botany*, a name given by Rumphius, Herb. Amboin. v. 6. 145. t. 65, to the *Verbesina Acmella* of Linnæus, see Spilanthus, n. 3. The above appellation is designed to express the use made of this plant by the black school-masters at Amboyna, who cause their young pupils to chew the flowers or the root, either alone or with Betle-nut, in order that they may more easily pronounce some of the difficult Arabic letters, such as *Tscha* and *Ze*, both which they commonly confound with *S*. The Malay name, *Daun murit*, School-boy's herb, given to this *Spilanthus*, as well as to *Bidens pilosa* of Linnæus, has the same allusion. Such plants agree with Pellitory of Spain, *Anthemis Pyrethrum*, in a peculiar property of stimulating the mouth, accompanied by a sense of coolness, and a slight saline taste, all which together cause a great flow of saliva. Hence they are beneficial in tooth-ache arising from cold rheum, but the slight numbness and tingling of the nerves, which attend their use, should seem rather unfavourable to precise enunciation. The recent flowers of *Spilanthus oleracea*, slightly rubbed upon the gums, are perhaps the best of the whole tribe for producing the above effects.

ABDALLAH, Ebn-Zobeir, l. 4, Heg. 63.

ABDAS, in *Biography*, a Persian bishop of the fifth century, who deserves to be exhibited in the page of history as a cautionary example of the folly of supporting any cause by persecution. Having destroyed a pagan temple belonging to the worshippers of fire, the king of Persia, instigated by the Magi, ordered him to rebuild it at his own charge; but as he refused to comply with this order, a dreadful persecution was commenced against the Christians, which lasted 30 years; and in this persecution Abdas lost his life. Bayle.

ABDOMINAL Ring. For Obliqui, &c. *r.* Obliquus.

ABELICEA, in *Botany*, Ἀβελικέα in modern Greek, see our ninth species of Ulmus.

ABERAERON, in *Geography*, a small town and port of Cardiganshire, much frequented by small coasting-vessels, which convey the corn and other produce of the district to the

the Englifh markets. The harbour has been lately much improved by the conftruction of a pier. A market has been lately eftablifhed here.

ABEREMOA, in *Botany*, altered by Aublet from the Caribbean appellation of the fame plant, Aubl. Guian. 610. t. 245; fee GUATTERIA hereafter.

ABERPORTH, in *Geography*, a little fifhing-town of Cardiganfhire, pleafantly fituated at the entrance of the river which flows by Blaenporth. The craft belonging to this port are chiefly employed in bringing lime-ftone from Pembrokefhire and other parts, which are burnt here, to fupply the neighbourhood with manure, and for other purpofes.

ABILDGARDIA, in *Botany*, a genus of Profeffor Vahl's, dedicated by him to the memory of the late Peter Chriftopher Abildgaard, a native of Denmark, formerly profeffor of the veterinary art, who contributed much information to Profeffor Rottböll on the fubject of Graffes. Mr. Brown retains this genus, not without a hint of its too near affinity to FIMBRISTYLIS; fee that article. We truft the barbarifm of the double *a* may be difpenfed with, and we have ventured to make that alteration.—Vahl Enum. v. 2. 296. Brown Prodr. Nov. Holl. v. 1. 229.—Clafs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juff. *Cyperaceæ*, Brown.

Gen. Ch. *Cal.* a fingle fcale to each flower, ovate, pointed, concave, compreffed, forming a fpike, imperfectly two-ranked. *Cor.* none. *Stam.* Filaments three, rarely but one, inferted beneath the germen, gradually elongated by age, anthers linear, longer than the filaments. *Pift.* Germen fuperior, acutely triangular, rather contracted at the fummit; ftyle bulbous and pyramidal at the bafe, the bulb triangular, broader than the germen, permanent, the upper part briftle-fhaped, deciduous; ftigmas three, fhorter than the ftyle. *Peric.* none. *Seed* one, fnow-white, nearly pear-fhaped, with three angles, contracted at the bafe, crowned at the fummit with the pointed bafe of the ftyle, convex at the fides, and rough with minute dots, without any furrounding briftles. *Recept.* thread-fhaped, gradually elongated, minutely cellular, dotted with brown, the edges of the cells membranous, from the permanent bafes of the fcales.

Eff. Ch. Glumes chaffy, imbricated, imperfectly two-ranked. Corolla none. Style three-cleft, with a triangular, pointed, permanent bafe. Seed folitary, pear-fhaped, triangular, without any briftles at its bafe.

The *ftems* of this genus are angular, flender, without joints; leafy at the bottom. *Leaves* narrow, channelled, fheathing. *Spikes* ovate-oblong, acute, compreffed, often twifted; their *fcales* clofely imbricated, keeled, very fmooth and polifhed, white, dotted with purple, the green keel of each elongated into a little point; the two lowermoft narrower than the reft. *Vahl. Brown.*

Mr. Brown remarks, that the ftyle is certainly deciduous, and the fpike, when in feed, by no means perfectly two-ranked; circumftances which bring the prefent genus very near to *Fimbriftylis*. The following are the only defcribed fpecies.

1. A. *monoftachya*. Single-fpiked Abildgardia. Vahl n. 1. Br. n. 1. (Cyperus monoftachyos; Linn. Mant. 180. Willd. Sp. Pl. v. 1. 271. Swartz Obf. 29. Rottb. Gram. 18. t. 13. f. 3. Gramen cyperoides minimum, fpicâ fimplici compactâ, radice tuberofâ odoratâ; Sloane Jam. v. 1. 120. t. 79. f. 2.)—Spike folitary. Scales uniform, nearly all fertile.—Gathered, by Kœnig, in fhady fituations in the Eaft Indies; in the paftures, and fea marfhes, of Jamaica and Hifpaniola, by Sloane and Swartz; and in the tropical part of New Holland, as well as at Port Jackfon, by Mr. R. Brown. The *root* appears to be perennial, with many long fimple fibres. *Herb* flender, fmooth and glaucous, forming tufts, about a foot high, with linear, very narrow, *leaves*, which fometimes break off, as Vahl remarks, at a fort of joint, below the middle of each. *Stem* fimple, flender, angular, and ftriated, taller than the leaves. *Spike* half an inch long, two-ranked, fubtended by a linear rough-edged leaf, fometimes, in the Linnæan fpecimen, exceeding its own length. The *glumes*, or *fcales*, have a green keel, accompanied by two white ribs, next to which is an affemblage of purple dots, the reft being cream-coloured. Two or three of the lower *glumes* are fmall, and apparently barren. There is faid to be but one *ftamen* to each *flower*. Sloane's fynonym feems, to us, doubtful.

2. A. *fchoenoides*. Rufhy Abildgardia. Br. n. 2.—"Spike folitary, naked. Outer fcales fhorter and barren; terminal ones narrower, with fpreading points."—Gathered by Mr. Brown, in the tropical part of New Holland. We have feen no fpecimen of this or the next.

3. A. *vaginata*. Sheathing Abildgardia. Br. n. 3.—"Spikes about three together; the middle one feffile. Scales pointed. Stem briftle-fhaped, angular, leaflefs; fheathed at the bafe."—Found by Mr. Brown, in the tropical part of New Holland.

4. A. *triftachya*. Three-fpiked leafy Abildgardia. Vahl n. 2. (Cyperus triflorus; Linn. Mant. 180. Willd. Sp. Pl. v. 1. 272. Schoenus cyperoides; Retz. Obf. fafc. 4. 8.)—Spikes about three together; the middle one feffile. Stem femi-cylindrical; round, bulbous, and leafy, at the bafe.—Native of the Eaft Indies, in hard dry ground. *Kœnig*. The *ftems* are from one to two feet high, rufhy and rigid, erect; according to Vahl, bulbous at the bottom, and wrapped with dry brown fheaths among the foliage. The *leaves* are fmooth, channelled, not fo tall as the ftem. *Spikes* two, three, or four, twice the fize of the firft fpecies, tumid, ovate, acute, twifted, of a dirty but polifhed white; three of them generally fpringing from one fhort leafy fheath, the two lateral ones elevated on long, flattened, ftriated, fmooth ftalks. *Stamens* three; *Vahl. Stigmas* long and downy.

ABINGTON, in *Geography*, a town of Maffachufetts, in Plymouth county, containing 1704 inhabitants.—Alfo, a townfhip of Pennfylvania, in Montgomery county, having 1236 inhabitants.—Alfo, a townfhip of Pennfylvania, in Luzerne county, having 511 inhabitants.

ABLATIVE ABSOLUTE. Subjoin, See Lowth's Grammar, p. 134.

ABOU HANNES. *Dele* See *Plate* I. *Birds*.

ABOU *Hanifah*. See HANIFAH.

ABOU-*Rihan*, in *Biography*, a geographer and aftrologer, was born at Beroun, in the province of Khovarezm, at the commencement of the 11th century, and on account of his fkill in fciences, denominated *Al Mohakabad*, the very fenfible philofopher. He wrote a "Treatife on Geography," a "Theory of the Fixed Stars," a "Treatife on the Sphere," and an "Introduction to Judicial Aftrology." D'Herbelot Bib. Orient.

ABRAHAM. Line 25, infert *Ante* A.D. 1921. Col. 2, l. 56, inftead of A.D., and col. 3, l. 34, inftead of A.D. infert B.C.

ABRONIA, in *Botany*, Juff. Gen. 448. See TRICRATUS.

ABSCESS *under the Cranium*, infert *and*.

ABUCCO. Subjoin, See WEIGHT.

ABUS-

ABUSCHÆHHR. See Busheer.

ABUTA, in *Botany*, a Braſilian name, firſt publiſhed by Barrere, adopted by Aublet, and recently by De Candolle, as well as Juſſieu. It may remain for the preſent, till the characters of the genus are known. Theſe are hitherto involved in great uncertainty, the flowers not having been obſerved by any botaniſt.—Barr. Hiſt. Nat. de la France Equinoxiale, 1. Aubl. Guian. 618. Juſſ. 286. De Cand. Syſt. v. 1. 542.—Claſs and order, *Dioecia Dodecandria?* (Polyandria Polygynia, *Aubl.*) Nat. Ord. *Meniſperma*, Juſſ.

Eſſ. Ch. Male, unknown.

Female, Fl. unknown. Berries two or three, ovate, ſomewhat compreſſed, dry, ſingle-ſeeded.

Lamarck and Willdenow have conſidered this genus as not diſtinct from Menispermum, ſee that article; but Profeſſor De Candolle reckons the large, dry, ovate, not kidney-ſhaped, *berries*, ſo termed, we preſume, becauſe of the brittle ſhell of their ſeed, as affording a ſufficient character, even without the flowers. He is more inclined to refer *Abuta* to his own genus of *Cocculus*, ſeparated by him from *Meniſpermum;* but their habits are ſomewhat different. Two ſpecies of *Abuta* are defined by this writer, but *A. amara* of Aublet, Guian. 620. t. 251, is referred, on the authority of Richard, to *Ariſtolochia*. Theſe are large twining ſhrubs, with ovate *leaves*, whoſe pinnate ribs ſpring nearly from one point at the baſe.

1. A. *rufeſcens*. Reddiſh Abuta, or Falſe Pareira-brava. Aubl. Guian. 618. t. 250. De Cand. n. 1. (A. ſcandens, ampliſſimo folio cordiformi, ſubtus tomentoſo; Barr. Fr. Equin. 1. Meniſpermum Abuta; Lamarck Dict. v. 4. 100. Willd. Sp. Pl. v. 4. 828.)—Leaves ovate, acute, entire; downy beneath.—Native of woods in Braſil, Cayenne, and Guiana. Aublet found it in almoſt every foreſt of the laſt-mentioned country, that he examined, bearing fruit in January. The Portugueſe confound this plant with the true *Ciſſampelos Pareira*, and conſider its root of equal efficacy in jaundice, diſorders of the kidneys and bladder, as well as internal abſceſſes, and menſtrual ſuppreſſions. The climbing *ſtem*, and downy branches, reach to the tops of trees, and bear large, alternate, ſtalked, coriaceous, veiny, entire *leaves*, from four inches to a foot long; ſmooth above; covered beneath with prominent, reticulated, downy veins, ſpringing copiouſly from five principal ribs, which radiate from nearly the baſe of the leaf. The *footſtalks* are about half the length of the leaves, round, finely and denſely downy. *Berries* elliptical, downy, an inch long, three upon each receptacle, and forming large axillary branches. There is ſaid to be a variety whoſe woody parts, as well as the pubeſcence of the foliage, is reddiſh. The Creoles make a decoction of the branches of the red and white varieties indifferently, to cure obſtructions of the liver, to which they are very ſubject. *Aublet.*

2. A. *candicans*. Whitiſh-leaved Abuta. De Cand. n. 2. Richard MSS.—"Leaves ovate, pointed, ſomewhat crenate, or minutely lobed; ſmooth and whitiſh beneath."—Gathered in Cayenne by M. Richard, who unluckily did not meet with the flowers. The *branches* are round and ſmooth. *Footſtalks* four inches long, round and ſmooth likewiſe. *Leaves* five to ſeven inches long, three or four broad, nearly entire, or ſlightly criſped, or toothed, in the margin; even and ſmooth above; pale or nearly white underneath, but, as it ſeems, quite ſmooth; the ribs pinnate, the two lower lateral ones cloſe together. The inhabitants of Cayenne call this plant *Liane amère*, Bitter Vine. *De Candolle.*

ABYSSINIAN Music. See Music.

ACACIA, in *Botany*, an ancient Greek name, derived from ακαζω, *to point* or *ſharpen*, in reference to its thorny habit. De Theis deduces all words of this etymology from the Celtic, *ac*, a point. The ακακια of Dioſcorides, book i. chap. 133, was a ſort of Egyptian thorn, "of a diffuſe or ſpreading mode of growth, with a white flower, and a pod reſembling lupines." Its expreſſed juice, dried in the ſhade, was an aſtringent medicine much in uſe, and the ſhrub yielded alſo a clear white gum. This may very well have been a plant of the preſent genus. Willdenow, who eſtabliſhed this genus, firſt ſeparated it from the Linnæan Mimosa (ſee that article), which has become inconveniently numerous in ſpecies, and unqueſtionably is capable of diviſion by the characters of the fruit, of which Willdenow has very well taken advantage. He leaves in *Mimoſa* ſuch ſpecies as have a *lomentum*, or legume ſeparating into ſingle-ſeeded joints. Of theſe he defines 32, having a five-toothed corolla, and only eight ſtamens; and to many of them, being ſenſitive, the name *Mimoſa* is properly appropriated. For his other genera taken from hence, ſee Desmanthus, Inga, and Schrankia. We muſt obſerve however that the *Acacia* of Tournefort is not analogous to what is now before us.—Willd. Sp. Pl. v. 4. 1049. Ait. Hort. Kew. v. 5. 459. Purſh 305.—Claſs and order, *Polygamia Monoecia*, or rather perhaps *Polyandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-toothed. Corolla five-cleft. Stamens indefinite, from four to an hundred. Piſtil one. Legume of two valves. Some flowers male.

Obſ. The flowers, ſometimes four-cleft, have, in ſome inſtances, a corolla which ſeparates into four or five diſtinct petals. We have not had an opportunity of examining a ſufficient number of ſpecies to give a full generic character. Willdenow reckons up 102, in ſeven ſections; to which Mr. Brown has made numerous additions from New Holland, partly deſcribed in *Ait. Hort. Kew.* above cited. We ſhall give ſome examples of each ſection.

Sect. 1. *Leaves ſimple*. Sixteen ſpecies in Willdenow, to which ten are here added, nine of them from *Hort. Kew.*—Of this ſingular tribe, firſt diſcovered by our Britiſh circumnavigators, all the ſpecies, as far as hitherto known, bear, in a ſeedling ſtate, compound pinnate *leaves*, ſoon replaced by leafy or ſpinous ſimple footſtalks, which latter conſtitute the only foliage of the adult plant. There are no proper thorns or prickles in theſe. Their *ſtem* is ſhrubby, or arboreous, as well as throughout the whole genus. We have ſlightly adverted to this ſection at the end of our article Mimosa.

A. *verticillata*. Whorl-leaved Acacia. Willd. n. 1. Ait. n. 1. (Mimoſa verticillata; L'Herit. Sert. Angl. 30. Curt. Mag. t. 110. Venten. Malmaiſ. t. 63.)—Leaves whorled, linear-awlſhaped, rigid, ſpinous-pointed. Spikes ſolitary, cylindrical.—Gathered in Van Diemen's iſland, by the late Mr. David Nelſon, who ſent ſeeds to ſir Joſeph Banks in 1780. Hence this ſingular ſhrub became known in the Engliſh green-houſes, where it flowers in the ſpring, and ripens ſeed. The firſt two or three *leaves* of ſeedling plants are conjugate and pinnate, with elliptical obtuſe entire *leaflets:* the reſt are accurately whorled, ſimple, pungent, flattiſh thorns rather than leaves, ſix or eight in each whorl, about half an inch long, ſomewhat unequal, ſpreading horizontally. *Flowers* in denſe, yellow, thick, obtuſe *ſpikes*, which are an inch, more or leſs, in length, each on a ſimple, ſlender, axillary ſtalk, but there are ſometimes two or more of theſe ſtalks together. *Legume* linear, compreſſed, corrugated, of one cell with ſeveral kidney-ſhaped *ſeeds*.

A. *juniperina*. Juniper-leaved Acacia. Willd. n. 2. Ait. n. 2. (Mimoſa juniperina; Venten. Malmaiſ. t. 64.

"M. ulicifolia;

"M. ulicifolia; Wendl. Coll. 25. t. 6." *Willd.*)—Leaves imperfectly whorled, linear-awlshaped, rigid, spinous-pointed. Spikes solitary, globose.—Found near Port Jackson, New South Wales, from whence sir Joseph Banks is said to have received seeds about the year 1790. We have specimens from Dr. White. This differs from the foregoing in having its spinous *leaves* more crowded, and less distinctly whorled, more hairy *branches*, and globular heads of *flowers*, each flower, according to Ventenat, accompanied by a little ovate, pointed, stalked *bractea*.

A. *acicularis*. Needle-leaved Acacia. Brown in Ait. n. 3.—"Leaves scattered, roundish-awlshaped, pointed, rigid. Stipulas deciduous. Young branches smooth. Spikes solitary, globose."—Said to have been found in New South Wales, by colonel William Paterson, from whence it was sent to Kew in 1796. It flowers at the same season as the two preceding, and requires the same treatment. If we understand this species aright, the *leaves* are full an inch long, being twice the length of the two foregoing, and more slender. We received specimens answering to this description before 1796, from Dr. White.

A. *sulcata*. Furrowed Needle Acacia. Brown in Ait. n. 4.—"Leaves thread-shaped, furrowed on all sides, with a harmless point. Heads of flowers usually in pairs. Bracteas ovate, concave, permanent, at the base of the flower-stalk. Legumes zigzag."—Observed by Mr. Brown on the south-west coast of New Holland, from whence it was introduced, in 1803, by Mr. Peter Good. This is likewise a green-house shrub, flowering from May to August.

A. *suaveolens*. Sweet-scented Acacia. Willd. n. 4. Ait. n. 5. (Mimosa suaveolens; Sm. Tr. of Linn. Soc. v. 1. 253. Labill. Nov. Holl. v. 2. 87. t. 236. M. angustifolia; Jacq. Hort. Schoenbr. v. 3. 74. t. 391. M. obliqua; Lamarck Journ. d'Hist. Nat. v. 1. 89. t. 5.)—Leaves linear, pointed; tapering at the base. Clusters oblong, axillary. Flowers four-cleft. Branches triangular.—Native of New South Wales. Cultivated, before 1790, by Mr. Thomas Hoy, in Sion gardens. A green-house shrub, flowering in the spring. The acute edges of the *branches* are bright red. The first *leaves* are conjugate, pinnate, with thick elliptical leaflets, and a lanceolate common footstalk; the rest alternate, narrow, coriaceous, four or five inches long, rather glaucous, smooth, thick-edged. *Flowers* simply racemose, yellowish-white, fragrant, their *corolla* deeply four-lobed. *Stamens* very numerous. *Legume* elliptical, an inch and a half or two inches long, and one inch broad, finely glaucous.

A. *stricta*. Double-headed Acacia. Willd. n. 8. Ait. n. 8. (Mimosa stricta; Andr. Repos. t. 53. Curt. Mag. t. 1121.)—Leaves linear-obovate, obtuse; tapering at the base. Spikes globose, stalked, axillary, in pairs, divaricated.—Native of New South Wales, from whence sir Joseph Banks is recorded to have received seeds in 1790. This requires the same treatment, and flowers at the same time, as the last, from which its capitate five-cleft *flowers*, and more dilated rounded-pointed *leaves*, at once distinguish it. Dr. Sims, in Curtis's Magazine, under this species, has given but too just reasons for retaining the genus *Mimosa* entire for the present, which principally refer to our ignorance of their fruit in a number of instances. Our learned friend, however, has since conformed to the new arrangement; and we think, with Willdenow, that enough is known for us to venture on the division this author has proposed, which may generally be supported by analogy, if not by absolute demonstration.

A. *melanoxylon*. Black-wooded Acacia. Brown in Ait. n. 12. Curt. Mag. t. 1659.—Leaves elliptic-lanceolate, many-ribbed, slightly falcate. Spikes globose, in short clusters. Flower-stalks and young branches angular, powdery. "Umbilical cord coloured, plaited, nearly surrounding the seed."—Found by Mr. Brown, in Van Diemen's island. From him we adopt the singular character of the umbilical cord. This is a considerable *tree*, raised by John Walker, esq. of Arno's Grove, Southgate, who received the seeds under the name of Black-wood, about the year 1808. The young twigs are covered with rusty mealiness. *Leaves* stalked, three inches long, and one broad, slightly glaucous, usually five-ribbed. *Flowers* pale-yellow, their globular spikes disposed in short axillary clusters, about twice the length of each footstalk. We have no account of the *legume*.

A. *Sophoræ*. Sophora-podded Acacia. Br. in Ait. n. 13. (Mimosa Sophoræ; Labill. Nov. Holl. v. 2. 87. t. 237.)—Leaves oblong-obovate, equilateral, many-ribbed. Spikes cylindrical, axillary, in pairs. Petals four. Legumes linear, curved, pointed. Umbilical cord plaited.—Found by Labillardiere, as well as by Mr. Brown, in Van Diemen's island. Its seeds were brought by the latter to Kew Garden, and raised there in 1805, but the plants have not yet blossomed. The young *leaves* are represented by Labillardiere as pinnate and trijugate; the rest obovate, two or three inches long. *Spikes* nearly sessile, hardly an inch long, and very slender. *Flowers* small. *Legumes* five or six inches in length, tumid, and twisted, a quarter of an inch broad. Each *seed* is subtended by a cup-like tunic, which we presume is the umbilical cord of Mr. Brown.

A. *marginata*. Marginate-leaved Acacia. Br. in Ait. n. 14.—"Leaves oblong-lanceolate, rather falcate, bordered, single-ribbed; their anterior edge somewhat narrowed, with a solitary gland. Heads about four-flowered, disposed in clusters."—Observed by Mr. Brown on the south-west coast of New Holland, from whence seeds were sent in 1803, by Mr. Peter Good. A green-house shrub, flowering from April to June. *Aiton.*

A. *myrtifolia*. Myrtle-leaved Acacia. Willd. n. 14. Ait. n. 15. (Mimosa myrtifolia; Sm. Tr. of Linn. Soc. v. 1. 253. Bot. of New Holl. 51. t. 15. Curt. Mag. t. 302.)—Leaves elliptic-lanceolate, oblique, thick-edged, single-ribbed, with a solitary gland at their anterior margin. Heads of flowers clustered, aggregate.—Native of New South Wales. Raised by Mr. Thomas Hoy, before the year 1789. A green-house shrub, flowering from February to May, or late in autumn. The *stem* is three or four feet high, with angular branches. First *leaves* conjugate, pinnate; the rest about two inches long, broadly lanceolate, pointed, very rigid, somewhat glaucous, often wavy, smooth. *Flowers* pale yellow, fragrant, three or four in each round head, the heads disposed variously in somewhat compound axillary clusters, nearly equal in length to the leaves. *Legume* linear, curved, tumid, with very thick edges.

A. *hispidula*. Little harsh Acacia. Willd. n. 15. Ait. n. 16. (Mimosa hispidula; Sm. Bot. of New Holl. 53. t. 16.)—Leaves elliptical, acute, oblique, minutely toothed, rough on each side and at the margin. Young branches harsh. Flowers four-cleft, in solitary axillary heads.—Native of New South Wales, from whence specimens were sent to us, with coloured drawings, in 1794, and seeds about the same time to sir Joseph Banks. The roughness of the *foliage* and *branches* is very remarkable, caused by short, rigid, prominent hairs, or points. The *leaves* are sessile, an inch long, vertical, very stiff, deep-green. *Heads* stalked, globose, many-flowered. *Legume* thick-edged, elliptic-oblong, sometimes with one or two contractions. *Seeds* few.

A. *hastulata*.

A. *haſtulata.* Little Halberd-leaved Acacia.—Leaves deltoid, ſpinous-pointed, roughiſh; their upper angle glandular. Stipulas briſtle-ſhaped, permanent. Branches rough. Flowers in ſolitary axillary heads.—Gathered near King George's ſound, on the ſouth-weſt coaſt of New Holland, by Mr. Menzies, to whom we are obliged for a ſpecimen. This remarkable new ſpecies is evidently allied to the two laſt-mentioned, though abundantly diſtinct from both. The ſhrubby *ſtem* bears numerous, erect, round, rough, wand-like *branches*, beſet with innumerable, ſpreading, vertical *leaves*, about a quarter of an inch long, ſingle-ribbed, unequally deltoid, with an elongated ſpinous point, thick-edged, rough with minute points; their lower angle either rounded or ſomewhat toothed; the upper more prominent, and tipped with a gland. *Stipulas* ſlender, erect, in pairs at the baſe of each leaf. *Flowers* three or four in each of the little ſtalked heads, which are very numerous all along the branches.

A. *decipiens.* Paradoxical Acacia. Br. in Ait. n. 17. Curt. Mag. t. 1745. (Mimoſa decipiens; Konig in Ann. of Bot. v. 1. 366. t. 8. Adiantum truncatum; Burm. Ind. 235. t. 66. f. 4. Linn. Syſt. Veg. ed. 13. 790.)—Leaves triangular-wedgeſhaped, ſpinous-pointed, ſmooth; their upper angle glandular. Stipulas briſtle-ſhaped, deciduous. Branches ſmooth. Flowers in ſolitary axillary heads.—Gathered by Mr. Menzies on the ſouth-weſt coaſt of New Holland, and not on the weſt ſide of North America, as mentioned in the Annals of Botany. Seeds were ſent to Kew in 1803, by Mr. Good, and the plant is marked by Mr. Aiton as a green-houſe ſhrub, flowering from March to June. Its hiſtory is certainly curious; ſpecimens without flowers having been taken by profeſſor Burmann, who miſled Linnæus, for an *Adiantum*, which error was detected by the late Mr. Dryander, on ſeeing Mr. Menzies's ſpecimens. Thoſe of Burmann were reported to have come from Java, in which there may be a further miſtake. At any rate this plant is nearly related to our laſt-deſcribed, and grows in the ſame country. The *leaves* differ in being larger, half an inch to an inch long, erect, and differently ſhaped, their inner, or upper, glandular angle being greatly extended, while the lower or rounded angle, ſeen in *A. haſtulata*, is wanting. The *flowers* are more numerous, from ſeven to ten, in each round head.

A. *biflora.* Two-flowered Acacia. Br. in Ait. n. 18.—"Leaves triangular; the outer angle ſpinous; inner glandular. Stipulas briſtle-ſhaped and ſpinous, permanent. Young branches downy. Heads two-flowered."—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence it was ſent to Kew by Mr. Good, in 1803. A green-houſe ſhrub, flowering from March to June. We have ſeen no ſpecimens.

A. *armata.* Simple-leaved prickly Acacia. Br. in Ait. n. 19. Curt. Mag. t. 1653.—"Leaves oblong, halved, ſmooth, with a ſmall point; their ſolitary rib near and parallel to the ſomewhat abrupt interior margin. Stipulas ſpinous. Heads ſolitary, globoſe. Branches hairy."—Obſerved by Mr. Brown, on the ſouth coaſt of New Holland. Sent to Kew, by Mr. Good, in 1803. A green-houſe ſhrub, flowering from April to June. *Leaves* dark green, an inch long, ſeſſile. *Flowers* yellow, numerous.

A. *alata.* Wing-ſtalked Acacia. Br. in Ait. n. 20.—"Stem winged on two ſides. Leaves decurrent, ſingle-ribbed, tipped with a ſmall ſpine; their inner margin with one glandular tooth. Stipulas ſpinous. Heads ſtalked, moſtly ſolitary."—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent to Kew, by Mr. Good, in 1803. This is likewiſe a ſhrubby green-houſe plant, flowering from April to July.

Sect. 2. *Leaves conjugate, pinnate.* Seven ſpecies in Willdenow, to which one of Mr. Brown's is to be added from *Hort. Kew.* The *Prodromus* of this able author, when completed, will probably furniſh more New Holland ſpecies to this ſection.

A. *xylocarpa.* Wooden-fruited Acacia. Willd. n. 17. (Mimoſa xylocarpa; Roxb. Corom. v. 1. 68. t. 100.)—Leaves conjugate, pinnate; leaflets four pair, ovate-oblong, acute. Heads globoſe, many-flowered, lateral, ſtalked, in pairs.—Native of the mountainous parts of the Circars of Hindooſtan, caſting its leaves during the cold ſeaſon, and flowering when the hot weather begins. This is one of the largeſt trees of this genus or any of its allies; the timber very hard, of a chocolate colour towards the centre, and much eſteemed for purpoſes where hardneſs, toughneſs, and durability, are requiſite, as in ploughs, the natives ſeldom uſing iron in that implement. The *leaves* are large, ſmooth, paler beneath, conſiſting of two diviſions, or wings, and thoſe of four pair of *leaflets* each, except that the innermoſt leaflet on each ſide, at the bottom, is wanting: the lower leaflets are about two inches long; the upper four or five. *Heads* of flowers whitiſh, the ſize of a cherry, on ſimple ſtalks, two or three inches in length. *Corolla* bell-ſhaped, five-cleft. *Stamens* ten. *Legume* only one from each head, ovate, compreſſed, very large and woody, three or four inches long, the ſtalk becoming neceſſarily greatly thickened. *Seeds* about ten, oval, ranged near the lower edge, as large as kidney-beans.

A. *pulchella.* Zigzag Spiny Acacia. Br. in Ait. n. 22.—"Leaves conjugate, pinnate, with a ſtalked gland between the wings, each of which has from five to ſeven pair of leaflets. Stipulas ſpinous, nearly equal to the leaves. Heads ſolitary. Branches zigzag."—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent to Kew, in 1803, by Mr. Good. A green-houſe ſhrub, flowering from April to July.

Sect. 3. *Leaves doubly pinnate. Stem without thorns. Spikes oblong.* Eleven ſpecies in Willdenow, the laſt of which, *A. Houſtoni*, we ſhall remove to the following ſection.

A. *muricata.* Warty Acacia. Willd. n. 25. (A. latifolia alopecuroides, flore albo; Plum. Ic. 6. t. 11. Mimoſa muricata; Linn. Sp. Pl. 1504.)—Thorns none. Leaves doubly pinnate; firſt diviſion of five pair; ſecond of many pair; leaflets abrupt. Spikes axillary, aggregate, nearly cylindrical. Branches warty.—Gathered in South America, or the Weſt Indies, by Plumier, whoſe figure is the only authority for this ſpecies. The *branches* are round, and warty, as well as the lower part of the *flower-ſtalks*, which laſt are evidently axillary, not, as Willdenow ſays, terminal. They are longer than the large compound *leaves*, and bear four or five alternate denſe *ſpikes*, on partial ſtalks. *Leaflets* numerous, crowded, elliptical, veiny, emarginate, about a half or three-quarters of an inch long. *Flowers* numerous, very ſmall. *Legumes* ſeveral, ſpreading, four or five inches in length, linear, flat, veiny, wavy at the edges, with many oval flat *ſeeds*.

A. *pallida.* Pale South-American Acacia. Willd. n. 26.—"Thorns none. Leaves doubly pinnate; firſt diviſion of two pair; ſecond of twelve pair; leaflets linear, obtuſe, downy. Spikes thread-ſhaped, much longer than the leaves."—Gathered by Humboldt and Bonpland, in South America. *Branches* round, warty, divaricated. *Leaflets* obtuſe at each end, ſometimes but ten pair; clothed ſparingly on the upper ſide, more denſely on the under, with fine pubeſcence; the edges fringed. There is a cup-ſhaped ſeſſile *gland* between the ſecondary diviſions of each leaf (indications of which appear likewiſe in Plumier's plate of the foregoing).

Footstalks hairy. *Spikes* axillary, solitary, three or four inches long, being thrice the length of the leaves. *Flowers* opposite, of five *petals*. *Willdenow.*

This seems much allied to the last, but the shape and downiness of the *leaflets*, and the solitary *spikes*, indicate a sufficient difference.

A. *arenosa.* Sand Acacia. Willd. n. 29.—"Thorns none. Leaves doubly pinnate; first division of six pair; second of sixteen pair; leaflets linear, acute. Spikes thread-shaped, in pairs."—Found by Mr. Bredemeyer at the Caraccas, about the sandy banks of rivers. A *shrub* ten or twelve feet high, with angular downy *branches*. *Leaflets* fringed, from sixteen to twenty-four pair. *Footstalks* clothed with hoary down; the partial ones accompanied by an acute intermediate gland. *Spikes* axillary, measuring three or four inches, generally rather longer than the leaves. *Flowers* opposite, white, fragrant. *Calyx* with four or five teeth. *Corolla* in four or five deep segments. *Stamens* twice as many, and thrice as long. *Willdenow.*

A. *guianensis.* Guiana Acacia. Willd. n. 32. Ait. n. 25. (Mimosa guianensis; Aubl. Guian. 938. t. 357.)—Thorns none. Leaves doubly pinnate, each division of about ten pair; leaflets elliptical, obtuse. Common footstalk with a convex gland. Spikes thread-shaped, axillary.—Observed by Aublet in Cayenne and Guiana, flowering in November, and bearing ripe seeds in January and February. This is a large *tree*, whose *trunk*, thirty or forty feet high, is a foot or more in diameter, with a smooth grey bark, and white brittle wood; the *branches* widely spreading. *Leaflets* elliptical, about half an inch long. The first divisions of the *leaves* are sometimes not more than seven or eight. *Stipulas* rounded, deciduous. *Spikes* axillary, from two to five together, on square simple stalks, the *flowers* small and densely crowded. *Calyx* with five teeth. *Corolla* of one petal, in five sharp lobes. *Stamens* ten, inserted into the calyx below the corolla, long, slender, with heart-shaped *anthers*, each of which bears a little leafy stalked appendage. *Legume* linear-oblong, flattish, brown, smooth, three or four inches in length, with several *seeds*.

A. *lophantha* more properly belongs to this section, though placed in the next.

Sect. 4. *Leaves doubly pinnate. Stem without thorns. Spikes globose.* Thirty-one species in Willdenow, to which we have three to add, besides *A. Houstoni.*

A. *ciliata.* Ciliate-winged Acacia. Br. in Ait. n. 23.—"Without thorns, hairy. Leaves doubly pinnate; first division of two pair; second of two or three pair. Stipulas nearly setaceous, deciduous. Heads solitary."—Gathered by Mr. Brown, on the south-west coast of New Holland; and sent to Kew, by Mr. Good, in 1803. A green-house shrub, flowering from March to June, of which we have not seen either specimen or figure.

A. *nigricans.* Unequal-winged Acacia. Br. in Ait. n. 24. (Mimosa nigricans; Labill. Nov. Holl. v. 2. 88. t. 238.)—Without thorns, smooth. Leaves doubly pinnate; first division of two pair; second of two or three pair in the lower, and from five to seven pair in the upper. Stipulas slender-awlshaped. Heads solitary.—Native of the south-west coast of New Holland, from whence Mr. Good sent seeds to Kew, in 1803. A green-house shrub, flowering from May to July, said to be about six feet high in a wild state. The *leaflets* are uniform, elliptical, obtuse, one-third of an inch long. *Heads* axillary, stalked, one, two, or three together. *Corolla* deeply five-cleft. *Stamens* about 150. *Legumes* one or two from each head, linear-oblong, one inch and a half in length, and one-third of an inch in breadth. *Labillardiere.*

A. *odoratissima.* Fragrant Coromandel Acacia. Willd. n. 37. Ait. n. 27. (A. non spinosa, &c.; Pluk. Amalth. t. 251. f. 4. Mimosa odoratissima; Linn. Suppl. 437. Roxb. Coromand. v. 2. 12. t. 120.)—Thorns none. Leaves doubly pinnate; first division of four pair; second of ten or twelve pair; leaflets obtuse, the lowermost very minute. Heads panicled, terminal.—Native of the mountainous parts of the coast of Coromandel, flowering in the hot season. The *wood* is hard, and equally useful with that of *A. xylocarpa.* (See Sect. 2.) The *leaves* are a span long, with uniform *leaflets*, an inch in length, glaucous beneath, very unequal at their base. *Flowers* numerous, white, highly fragrant, in numerous, aggregate, stalked, globular *heads*. *Legume* coriaceous, about six inches in length, and one in breadth, with a central row of *seeds*.

A. *arborea.* Rough Tree Acacia. Willd. n. 38. Ait. n. 28. (A. non spinosa jamaicensis, foliis latâ basi in metæ formam fastigiatis; Pluk. Almag. 6. t. 251. f. 2. A. arborea maxima non spinosa, pinnis majoribus, flore albo, siliquâ contortâ coccineâ ventricosâ elegantissimâ; Sloane Jam. v. 2. 54. t. 182. f. 1, 2. Mimosa arborea; Linn. Sp. Pl. 1503. Swartz Obs. 390. Browne Jam. 252. n. 3?)—Thorns none. Leaves doubly pinnate; first division of seven pair; second of seventeen pair; leaflets halved, acute. Heads axillary, stalked. Legume contorted, tumid. Seeds spherical.—Native of fields and woods in Jamaica, where it is called Wild Tamarind, and is one of the largest trees of that island. The *wood*, according to Sloane, is durable, though soft and white. *Leaves* of numerous, small, dark-green, smooth leaflets. *Heads* globular, of numerous sweet-scented *flowers*, whose *corolla* is reddish, the *stamens* whitish, very long. *Legume* as if beaded, four or five inches long, red; its valves of a blood-red on the inside. *Seeds* globular, of a shining black. This species was cultivated by Miller, but is now unknown in our gardens, nor are botanists in general well acquainted with it; Forskall and Thunberg having given the name of *Mimosa arborea* to two plants very different from this, as well as from each other.

A. *Julibrissin.* Smooth Tree Acacia. Willd. n. 39. Ait. n. 29. (Mimosa Julibrissin; Scop. Insubr. v. 1. 18. t. 8. Ait. ed. 2. v. 3. 440. M. arborea; Forsk. Ægypt.-Arab. 177. Gmel. It. v. 3. 372. t. 40.)—Thorns none. Leaves doubly pinnate; first division of about ten pair; second of many pair; leaflets halved, obtuse with a point. Heads lax, aggregate, terminal. Legume flat, membranous, smooth.—Native of the Levant. Forskall saw it cultivated at Constantinople, where it was called *Djul ibrzim*, by the Turks; which name, denominating *a silky flower*, in allusion to the stamens, appears to be the origin of the specific appellation chosen by Scopoli. We have seen this species as large as a common apple-tree, covered with a profusion of blossoms, in the open ground at Turin, nor could any thing be more elegant or splendid. In England it is usually treated as a green-house plant, and flowers sparingly; though it succeeds well against a wall, with some protection in winter. The *leaves* are large and spreading, of numerous *leaflets*, half an inch long, very unequal in their two halves. *Flowers* lilac, with long monadelphous *stamens*, forming most beautiful tassels like white silk. *Legume* half a foot long, thin, pale brown, corrugated, unequal in breadth, with many small flattish *seeds*.

A. *villosa.* Downy Jamaica Acacia. Willd. n. 46. (Mimosa villosa; Swartz Prodr. 85. Ind. Occ. 982.)—Thorns none. Leaves doubly pinnate; first division of five or six pair; second of many pair; leaflets elliptical, oblique, downy. Stalks and branches hairy. Heads rather oblong,

oblong, panicled, terminal. Legume hairy, flat.—Found by Dr. Swartz, on mountains in the south of Jamaica. Browne seems by his herbarium to have confounded this with the real *A. arborea*, just described. The present is much smaller, being merely a *shrub*, six feet high, with hairy furrowed *branches*. *Leaflets* downy on both sides, smaller and more obtuse than in the *arborea*; glaucous underneath; from ten to twelve pair in each subdivision. *Clusters* terminal, composed of many oblong and obtuse, rather than globular *spikes*, on very hairy stalks. *Flowers* small, white, with numerous capillary *stamens*, of a tawny hue, inserted into the lower part of the *receptacle*. *Legume* short, very different from that of *arborea*.

A. *discolor*. Two-coloured-leaved Acacia. Willd. n. 47. Ait. n. 32. Curt. Mag. t. 1750. (Mimosa discolor; Andr. Repos. t. 235. M. botrycephala; Venten. Hort. Cels. t. 1.)—Thorns none. Leaves doubly pinnate; first division of five pair; second of about ten pair; leaflets lanceolate, pale beneath. Heads in terminal and axillary clusters, much longer than the leaves.—Native of New South Wales, from whence seeds and specimens were among the first brought into this country, in the year 1788. It is now not an uncommon green-house plant in general collections, flowering at various seasons. The *branches* are angular and zigzag. *Leaves* rather stiff, their *footstalks* hairy like the young branches; leaflets not half an inch long, acute, smooth; dark green above; very pale beneath. *Flowers* yellow, in numerous globular heads, disposed in very conspicuous long clusters.

A. *pubescens*. Hairy-stem'd Acacia. Br. in Ait. n. 33. (Mimosa pubescens; Venten. Malmais. t. 21. Curt. Mag. t. 1263.)—Thorns none. Branches hairy. Leaves doubly pinnate; first division of about eight pair; second of about fifteen pair; footstalks without glands; leaflets obtuse. Heads in axillary clusters, longer than the leaves.—Native of New South Wales, from whence its seeds are said to have been procured by sir J. Banks, about the year 1790. This pretty delicate species has an arborescent *stem*, with drooping *branches*, and its copious fern-like *foliage* exhibits a most elegant appearance. Both sides of the *leaflets* are of a similar bright green. The whole compound *leaf* measures usually two inches; the numerous clusters of yellow capitate *flowers*, which smell like new hay, being about twice that length.

A. *lophantha*. Two-spiked New Holland Acacia. Willd. n. 53. Ait. n. 34. (Mimosa distachya; Venten. Hort. Cels. t. 20. M. elegans; Andr. Repos. t. 563.)—Thorns none. Leaves doubly pinnate; first division of ten or twelve pair; second of about twenty pair; leaflets lanceolate; top and bottom of the common footstalk glandular. Spikes oblong, axillary, in pairs.—Observed by Mr. Brown, on the south-west coast of New Holland, from whence seeds were sent to Kew, in 1803, by Mr. Good. A tall *shrub*, or perhaps a *tree*, with furrowed warty *branches*. *Leaves* large, drooping, dark green, with innumerable narrow smooth *leaflets*. *Spikes* stalked, ovate or oblong, not globose, of numerous, crowded, sulphur-coloured *flowers*, having each about 200 monadelphous *stamens*. *Legume* oblong, flat, thick-edged, somewhat constricted here and there occasionally, where the seeds happen to be abortive.

A. *brachyloba*. Illinois Acacia. Willd. n. 54. Ait. n. 35. Pursh n. 1. (Mimosa illinoensis; Michaux Boreal.-Amer. v. 2. 254.)—"Herbaceous, without thorns. Leaves doubly pinnate; first division of five to eight pair; second of many pair, with a gland between the lowermost. Heads globose, axillary, solitary. Legumes lanceolate, straight."—In the extensive natural meadows of Illinois and Kentucky, flowering in June and July. Perennial. *Flowers* white, with only five *stamens*. *Pursh*. *Stem* smooth, furrowed. *Leaflets* from sixteen to twenty-four pair, linear, acute, slightly fringed at the base. *Footstalks* nearly smooth. *Heads* of flowers the size of a pea, stalked. *Legume* the length of the nail. *Willdenow*.

A. *glandulosa*. Glandulous Acacia. Willd. n. 55. Ait. n. 36. Pursh n. 2. (Mimosa glandulosa; Michaux Boreal.-Amer. v. 2. 254. Venten. Choix. t. 27.)—Herbaceous, without thorns. Leaves doubly pinnate; first division of about twelve pair; second of many pair, with a gland between each. Heads globose, axillary, solitary. Legumes oblong, curved.—On the banks of the rivers Tennessee and Mississippi, flowering in July. *Flowers* white, pentandrous. *Pursh*. This appears to be very nearly related to the last. Both are herbaceous, with perennial *roots*, and have been introduced into the English gardens, but we have not had any account of their success. They require the shelter of a green-house.

A. *decurrens*. Decurrent Acacia. Willd. n. 56. Ait. n. 37. (Mimosa decurrens; Venten. Malmais. t. 61.)—Thorns none. Leaves doubly pinnate; first division of about eleven pair; partial of innumerable linear leaflets, on a winged stalk, with a gland near the base, on the common stalk. Heads globose, in axillary clusters.—Native of New South Wales. Sir Joseph Banks is said to have introduced this plant at Kew, in 1790. It flowers in the early part of summer, and is a green-house *shrub*, of an elegant fern-like aspect, with strongly angular zigzag *branches*. The *leaves*, though their common stalk is subtended by a projection from the branch, are not really decurrent. *Flowers* yellow, forming short clusters of little round heads.

A. *grandiflora*. Great Red Acacia. Willd. n. 61. Ait. n. 39. (Mimosa grandiflora; L'Herit. Sert. 30. Thornton Illustr. t. 4. Andr. Repos. t. 592.)—Thorns none. Leaves doubly pinnate; first division of about fifteen pair; second of very numerous, elliptic-lanceolate, straight leaflets. Heads about five-flowered, in a terminal cluster.—Native of the East Indies, from whence it is said to have been introduced into the English stoves, by Mrs. Norman, about the year 1769. No figure of this stately plant, (Plukenet's synonym, cited by Willdenow, being too uncertain,) had ever appeared, till Dr. Thornton published his magnificent plate. The *stem* is shrubby, erect, slightly branched, downy, twelve feet or more in height, even in our gardens. *Leaves* large and spreading, with downy *footstalks*; their *leaflets* a quarter of an inch long, slightly fringed, bluntish, unequal at the base, but not curved or falcate. *Clusters* solitary, large, terminal, erect, of many alternate stalks, solitary or in pairs, clothed with rusty down, each stalk bearing a *head* of from four to six *flowers*, whose *corolla* is but half an inch long, of a pale greenish-red; but the very numerous *stamens*, two inches in length, and of a fine shining crimson, like tassels of silk, render this one of the most beautiful of its tribe.

A. *Houstoni*. Houstoun's Purple Acacia. Willd. n. 34. Ait. n. 26. (A. americana non spinosa, flore purpureo, staminibus longissimis, siliquis planis villosis, pinnis foliorum tenuissimis; Houst. Ic. ined. t. 20. Mill. Ic. 4. t. 5. Amman. Herb. 584. n. 17. Mimosa Houstoni; L'Herit. Sert. 30. Banks Rel. Houst. 12. t. 26. Gleditsia inermis; Linn. Sp. Pl. 1509, excluding the synonyms, except Miller's; and place of growth.)—Thorns none. Leaves doubly pinnate; first division of five or six pair; second of very numerous, linear, somewhat falcate leaflets. Heads of few flowers, in a terminal cluster.—Gathered at Vera Cruz, in South America, by Dr. Houstoun, who sent seeds to Miller, in 1729. These produced plants which flowered in the stove at Chelsea. The present species is certainly next akin to the last, however differently its inflorescence may have been described or delineated by authors, in which respect indeed Miller and Houstoun disagree. The plate of the former however has all the appearance of fidelity, and it is possible the partial *flower-stalks* may vary in length, or, more probably, be elongated as the flowers open. Having seen no specimens, we must be guided by the materials before us, from which we gather that the *leaves* of *A. Houstoni* have not half so many *pinnæ*, and that their *leaflets* are narrower, longer, more acute, and more curved. The *petals* are purple. *Legume* thick-edged, hairy, tapering at the base. The leaf in *Parad. Lond.* t. 64, cited in *Hort. Kew.* appears to belong to this species, but the *flowers*, and perhaps the *legume*, which is smooth, seem those of *A. grandiflora*. If this be the case, the smooth *legume*, not tapering at the base, would be an important addition to the specific character of *grandiflora*.

Sect. 5. *Leaves doubly pinnate. Stipulas becoming spines. Spikes elongated.* Ten species in Willdenow.

A. *juliflora*. Long-flowered Acacia. Willd. n. 66. Ait. n. 41. (Mimosa juliflora; Swartz Prodr. 85. Ind. Occ. 986, printed by mistake *piliflora*. M. diffusa, spica oblonga, siliquis longioribus compressis; Browne Jam. 252. n. 2.)—Spines stipulary, in pairs. Leaves doubly pinnate; first division of two pair, with intermediate glands; second of about twenty pair of oblong leaflets. Spikes axillary, two or three together, cylindrical, pendulous.—Native of very dry fields in the south part of Jamaica, flowering in the middle of summer. The *stem* varies from six to thirty feet in height. *Branches* long and spreading. *Spines* strong, four or five lines in length, prominent, curved upwards. *Leaves* spreading, with narrow, obtuse, smooth, ribbed *leaflets*. *Spikes* two or three inches long, lax, many-flowered. *Flowers* crowded, sessile, very numerous, yellow, sweet-scented. *Corolla* internally hairy. *Stamens* eight or ten, distinct. *Legume* from three to five inches long, compressed, smooth, often twisted, containing several oblong brown *seeds*, separated by fleshy partitions. There are numerous *flowers* in each spike destitute of a *pistil*. Cattle feeding on the leaves and young branches, unless gradually accustomed to them, are poisoned, and the sweet legumes are reported to be noxious. The inhabitants of Jamaica call this plant *Cashew*. Browne erroneously gives it the name of *Poponax*, which belongs to *Mimosa* (*Acacia*) *tortuosa*. *Swartz*. See Sect. 6.

A. *caffra*. Hottentot Acacia. Willd. n. 70. Ait. n. 42. (Mimosa caffra; Thunb. Prodr. 92.)—"Spines stipulary, in pairs, incurved. Leaves doubly pinnate; first division of twelve pair; second of many pair; with a gland on the footstalk. Spikes axillary, cylindrical."—Found by Thunberg in Southern Africa. Sent to Kew in 1800, by W. Somerville, M. D. The *branches* are round and striated. First divisions of the *leaves* from seven to twelve, second from twenty to thirty, pair; *leaflets* linear, obtuse, smooth. *Footstalks* nearly smooth; the common one bearing a depressed gland above its base. *Spike* stalked, two inches long. *Legume* the same length, linear-lanceolate, flat. *Willdenow*.

A. *Catechu*. Medicinal Acacia. Willd. n. 73. Ait. n. 44. (Mimosa Catechu; Linn. Suppl. 409. Woodv. Med. Bot. 183. t. 66. Roxb. Coromand. v. 2. 40. t. 175. Terra Japonica; Kerr in Med. Obs. and Inqu. v. 5. 151. t. 4.)—Spines stipulary, hooked, in pairs. Leaves hairy, doubly pinnate; first division of ten or twelve pair; second of many pair; with a gland at each extremity of the common footstalk. Spikes cylindrical, axillary, two or three together.—Native of the mountainous parts of Coromandel. A large tree, of which seeds have been sent by Dr. Roxburgh to sir J. Banks. These have vegetated at Kew, but the plants have not arrived at a flowering state. The *branches* are round, downy when young; the older ones beset with numerous pairs of small recurved thorns, originating in the *stipulas*, as in all the plants of this section. *Leaves* slender and delicate, finely hairy, pale green; their *leaflets* crowded, hardly a quarter of an inch long, linear, rounded at each end, unequal at the base. *Spikes* slender, three or four inches long, hairy, stalked, pale yellow. *Legume* oblong, acute at each end, flat, smooth, with three or four distant flat *seeds*. "The *wood*," says Dr. Roxburgh, "is good, and applied to various uses; but the natives have no idea of extracting from it, or any other, the *Catechu*, or *Terra Japonica*. Yet I believe there are many trees as fit to yield this extract, as the present." Mr. Kerr, assistant surgeon to the civil hospital at Bengal, has however described the mode of preparing the CATECHU, (see that article,) by boiling the interior coloured part of the wood of this species, till an inspissated extract is obtained, which is the drug in question, long supposed to be an earth produced in Japan. Another sort of *Catechu*, or *Gutta Gambir*, made in Sumatra, Prince of Wales's island, &c., has been shewn by Mr. Hunter, secretary to the Asiatic Society, in Transactions of the Linnæan Society, v. 9. 218. to be the produce of a species of NAUCLEA. (See that article, spec. 7.) We presume that Mr. Kerr and Mr. Hunter are equally correct, and that the two distinct kinds of *Terra Japonica*, known to druggists, are thus accounted for.

Sect. 6. *Leaves doubly pinnate. Stipulas becoming spines. Spikes globose.* Sixteen species in Willdenow.

A. *macracantha*. Long-thorned Acacia. Willd. n. 76. —"Spines stipulary, in pairs, lanceolate, compressed, nearly as long as the leaves, which are doubly pinnate; first division of twelve pair; second of many pair; with a depressed gland at each extremity of the common footstalk. Spikes stalked, globose."—Gathered by Humboldt and Bonpland in South America. The *branches* are striated, and nearly round. *Leaflets* about thirty pair in each division, linear, obtuse, fringed. *Footstalks* downy. *Spines* two inches or more in length, sharp-pointed, spreading at a right angle. *Heads* of *flowers* the size of a pepper-corn, on long stalks, in pairs, either axillary, or disposed in a sort of cluster at the ends of the branches. *Willdenow*. This species appears very remarkable, on account of the great size of its thorns.

A. *eburnea*. Ivory-thorned Acacia. Willd. n. 78. (Mimosa eburnea; Linn. Suppl. 437. M. leucacantha; Jacq. Hort. Schoenbr. v. 3. 75. t. 393.)—Spines stipulary, in pairs, cylindrical-awlshaped, combined at the base, spreading. Leaves doubly pinnate; first division of three or four pair; second of six or more pair; leaflets distant, elliptic-oblong. Heads axillary, stalked, aggregate.—Sent by Kœnig from the East Indies. Jacquin by mistake makes it a native of Africa. He cultivated it at Schoenbrun, but we have not met with this species in any English stove, the following one having been miscalled by the above name. The true *A. eburnea*, of which the original Linnæan specimen lies before us, is a twisted irregularly branched *shrub*, whose twigs are round and zigzag, armed with tremendous straight *spines*, which are white, smooth and polished, almost like ivory, but brown and very sharp at the end: the longest measure nearly two inches; some are but a quarter that size: they taper gradually from a thick confluent base. *Leaves* about two inches long, with smooth *leaflets*, placed at the distance of their own width from each other. *Common foot-*

stalk

ſtalk with two depreſſed glands in the upper part. *Flower-ſtalks* either axillary, or terminal and racemoſe, more or leſs aggregate, each bearing a globular *head*, of yellow ſweet-ſcented *flowers*. We know nothing of the *legume*.

A. *horrida*. Awl-thorned Acacia. Willd. n. 79, excluding the ſynonym of Jacquin, and perhaps Forſkall. (A. maderaſpatana, foliolis parvis, aculeis e regione binis prægrandibus horrida, cortice cinereo; Pluk. Phyt. t. 121. f. 4. A. eburnea; Ait. n. 46, but not of Willd. Mimoſa horrida; Linn. Sp. Pl. 1505. Vahl Symb. v. 1. 81? M. eburnea; Roxb. Coromand. v. 2. 54. t. 199.)—Spines ſtipulary, in pairs, linear-awlſhaped, angular, ſpreading, longer than the leaves; ſome much ſhorter and recurved. Leaves doubly pinnate; firſt diviſion of two or three pair; ſecond of many pair; leaflets crowded, on a hairy ſtalk. Heads axillary, ſtalked, aggregate.—Native of the Eaſt Indies, flowering in the cold ſeaſon, ſent by Dr. Roxburgh to ſir Joſeph Banks in 1792. This is a ſmall ill-looking *tree*, or large buſhy *ſhrub*, whoſe *branches* ſpread in every direction, and are round, purpliſh, wavy, very rigid, armed with formidable *thorns*, of various ſizes. Some of the latter are two inches long, white, ſpreading horizontally in oppoſite directions, ſcarcely combined at the baſe, much more ſlender and linear than in the *A. eburnea*, flat or channelled along their upper ſide; when young they are much ſmaller, needle-like, and hairy: others, on the ſame branch, and of the ſame age, with the large ones, are very ſhort and hooked. The *leaves* are not half the ſize of the laſt ſpecies. *Heads* of *flowers* globoſe, with a purpliſh *corolla*, and yellow *ſtamens*. *Legume* linear, twiſted, two inches long, ſmooth. The *flowers* are ſaid by Dr. Roxburgh to be ſeparated from each other, on their globoſe *receptacle*, by abrupt, fringed, chaffy ſcales, of which we can find no traces in our ſpecimens.

A. *tortuoſa*. Poponax Acacia. Willd. n. 82. (A. americana, ſiliquis teretibus ventricoſis, floribus luteis; Sloane Jam. v. 2. 56. Mimoſa tortuoſa; Linn. Sp. Pl. 1505. Swartz Obſ. 391. Browne Jam. 251. n. 1.)—Spines ſtipulary, in pairs, awl-ſhaped, much ſhorter than the leaves, round, downy. Leaves doubly pinnate; firſt diviſion of three or four pair; ſecond of many pair; leaflets crowded, on a downy ſtalk. Heads axillary, on downy ſtalks, ſolitary or in pairs. Legume externally fleſhy.—Very common in the low ſandy lands of Jamaica. The *ſtem* is ſhrubby, with ſpreading wavy *branches*, rendering the plant uſeful for hedges according to Dr. Swartz; but Browne ſpeaks of it as of little ſervice, the ſmell of every part being ſo rank and diſagreeable, that it cannot be uſed even for fire-wood. The taſte is bitter, and the *flowers* have an oppreſſive ſmell. Both theſe authors mention the *legumes* as furniſhed with a glutinous juice under their ſkin, whoſe qualities are eminently bitter and aſtringent. Sloane appears to confound the *A. Farneſiana* and others with this ſpecies. The true *tortuoſa*, of which we have Browne's own ſpecimen, comes near to *horrida* in botanical characters, but the *leaves* and *leaflets* are much larger; *thorns* ſmaller, not angular, but more tapering; *flower-ſtalks* downy, not ſmooth. There are no ſcales on the *receptacle* between the *flowers*, but the teeth of the long tubular *calyx* are very denſely and finely fringed. Dr. Swartz ſays this is the tree really called *Poponax* in Jamaica, Browne erroneouſly attributing that name to *A. juliflora*. Both are frequently met with in the ſame ſituations.

A. *farneſiana*. Sponge Acacia. Willd. n. 83. Ait. n. 47. (A. indica farneſiana; Aldin. Hort. Farneſ. 3. t. 2. 4. Mimoſa farneſiana; Linn. Sp. Pl. 1506.)—Spines ſtipulary, in pairs, awl-ſhaped. Leaves doubly pinnate; firſt diviſion of from five to eight pair; ſecond of many pair; leaflets crowded. Heads ſtalked, axillary. Legume tumid, coriaceous.—Native of Hiſpaniola, from whence the ſeeds were brought to Italy, early in the 17th century. This ſhrub is occaſionally ſeen in our ſtoves, being eſteemed for the peculiarly delicious ſcent of its balls of yellow *flowers*, which are produced during ſummer. A coloured figure is much wanted. The dry tumid *legume* diſtinguiſhes it clearly, as a ſpecies, from the laſt. The whole plant is ſmoother, nor have we ever obſerved the herbage to be fœtid.

A. *arabica*. Eaſt Indian Gum-Arabic Acacia. Willd. n. 86. (A. altera vera, &c.; Pluk. Almag. 3. t. 251. f. 1. Mimoſa arabica; Lamarck Dict. v. 1. 19. Roxb. Coromand. v. 2. 26. t. 149. Nella Tooma of the Telingas.)—Spines ſtipulary, awl-ſhaped, in pairs. Leaves doubly pinnate; firſt diviſion of five pair; ſecond of many pair. Heads axillary, about three together. Legume necklace-like, flat, denſely downy.—Native of the Eaſt Indies, whether of Arabia alſo may be doubted. Dr. Roxburgh ſays it is abundant over every part of India, thriving beſt in a low, ſtiff, uncultivated ſoil, and flowering moſt part of the year. Beſides yielding a great quantity of Gum Arabic, this tree is one of the moſt uſeful in India for its tough and hard wood, ſerving many valuable purpoſes in ſhip-building, wheel-carriages, &c. The aſtringent bark ſerves for dyeing, and making ink. The *branches* are round. *Spines* diſtinct, an inch, more or leſs, in length. *Leaves* like ſeveral of the foregoing, as are alſo the aggregate globular heads of yellow *flowers*. But the *legumes* afford a moſt ſtriking character, being flat, four or five inches long, covered with denſe hoary pubeſcence, like fine velvet, and remarkably contracted into numerous orbicular portions, in each of which is lodged a flattiſh *ſeed*. Cattle are very fond of the tender branches and young pods.

A. *vera*. Egyptian Gum-Arabic Acacia. Willd. n. 87. Ait. n. 48. Veſling Ægypt. 6. t. 8. Bauh. Hiſt. v. 1. p. 2. 429. (Mimoſa nilotica; Linn. Sp. Pl. 1506. Haſſelq. Travels, Engl. ed. 250. Woodv. Med. Bot. 187. t. 67.)—Spines ſtipulary, in pairs, linear-awlſhaped. Leaves doubly pinnate; firſt diviſion of five or ſix pair; ſecond of many pair; common ſtalk glandular. Heads axillary, about three together. Legume necklace-like, nearly flat, ſmooth. —Native of the ſandy deſarts of upper and lower Egypt, from whence Haſſelquiſt ſent ſpecimens to Linnæus, who ſeems to have deſcribed the ſame plant under the name of *Mimoſa Senegal*. This original Gum Arabic tree was known to our earlier botaniſts, and Gerarde appears to have cultivated it in his garden, whence it has obtained a place in Mr. Aiton's valuable work; but few perſons at preſent are acquainted with living, or even dried, ſpecimens, eſpecially of the *legumes*. Theſe clearly diſtinguiſh the ſpecies, being more ſtrictly contracted into orbicular portions than the laſt, with an obliquity well expreſſed in the wooden cut of Veſlingius. Their ſurface is brown, nearly or quite ſmooth, pale at the edges; the diſk of each lobe rather tumid, from the ſwelling of the *ſeeds*. In the *leaves* or *flowers* of theſe two ſpecies, we cannot, from the dried ſpecimens, detect any great difference; but the *ſpines* of *A. vera* are almoſt as remarkable for their length and whiteneſs as thoſe of *horrida*. For the moſt valuable produce of this tree, ſee Arabic, *Gum*.

Sect. 7. *Leaves doubly pinnate. Prickles ſcattered.* Eleven ſpecies in Willdenow.

A. *cæſia*. Grey Acacia. Willd. n. 97. Ait. n. 49. (A. ſpinoſa, indiæ orientalis, foliis ſubtus cæſiis, floribus globoſis luteis; Pluk. Mant. 1. Phyt. t. 330. f. 3. A. zeylanica ſarmentoſa, flore luteo globoſo; Burm. Zeyl. 3. Mimoſa cæſia; Linn. Sp. Pl. 1507.)—Branches and foot-

ſtalks

ftalks prickly. Leaves doubly pinnate; firft divifion of feven pair; fecond of fixteen pair; leaflets oblong-oval; a gland on the main footftalk. Spikes globofe, in terminal panicled clufters.—Native of the Eaft Indies, from whence it was procured for Kew garden, by fir J. Banks, in 1773, but appears not yet to have flowered. We have feen no authentic fpecimen of this fpecies.

A. *pennata*. Fine-leaved Acacia. Willd. n. 98. Ait. n. 50. (A. aculeata multiflora, foliis pennas avium referentibus; Burm. Zeyl. 2. t. 1. A. zeylanica, flofculis globofis luteis, foliis pinnatis tenuiffimè incifis, fpinis minoribus; Burm. Zeyl. 3. Mimofa pennata; Linn. Sp. Pl. 1507.)—Branches prickly. Leaves doubly pinnate, with many pair of general divifions, and very numerous linear leaflets; a gland on the common ftalk. Panicle terminal, fpreading; heads ftalked, aggregate; general flower-ftalks, like the bafe of the common footftalks, prickly. Legume flat, fmooth; wavy at the edges.—Native of Ceylon, and other parts of the Eaft Indies. Sent to Kew, in 1773, by fir J. Banks. We have fpecimens from Dr. Roxburgh. The very delicate flender *leaflets*, which, in the dried plant at leaft, fold together, give a feathery appearance, well expreffed in Burmann's plate. The *panicle* is very large and compound, with downy rufty ftalks; its main branches only armed with fmall hooked prickles. The *legumes*, not hitherto defcribed, but very important in difcriminating this multifarious tribe, are about three inches long, tapering, though rather blunt, at each end, flat, thick-edged, wavy or finuous at both margins. *Seeds* about four.

A. *Ceratonia*. Round-leaved Acacia. Willd. n. 101. Ait. n. 52. (A. repens aculeata, flore albo, foliis Siliquæ; Plum. Ic. 4. t. 8. Mimofa Ceratonia; Linn. Sp. Pl. 1508.)—Branches, and all the ftalks, prickly. Leaves doubly pinnate; leaflets three pair, roundifh-obovate, oblique, three-ribbed. Panicle terminal. Heads globofe. Legume flat, prickly at the edges.—Native of the Weft Indies, from whence the prefent duke of Marlborough is faid to have introduced it into his rich collection, before the year 1800. The remarkable roundnefs of the *leaflets*, which would have authorized the name of *rotundifolia*, and their greater fize, diftinguifh the prefent fpecies from all we have hitherto noticed. Every part is extremely prickly, but devoid of pubefcence. The heads of *flowers* are rather fmall, and, according to Plumier, white. He delineates the *legume* of a flat, oblong, obtufe figure, two or three inches long and one broad, fringed with hooked prickles.

A. *tamarindifolia*. Tamarind-leaved Acacia. Willd. n. 102. Ait. n. 53. (A. aculeata, flore albo, foliis Tamarindi; Plum. Ic. 4. t. 7. Mimofa tamarindifolia; Linn. Sp. Pl. 1509. Jacq. Hort. Schoenbr. v. 3. 77. t. 396.)—Branches prickly. Leaves doubly pinnate; firft divifion of five or fix pair; fecond of about fifteen pair; a gland on the common ftalk; leaflets oblong. Stipulas and bracteas heart-fhaped. Clufters terminal. Heads globofe. Legume flat, fmooth.—Native of South America and the Weft Indies. Said to have been cultivated by Kennedy and Lee, at Hammerfmith, in 1774. The name is very expreffive of the afpect of the *leaves*. The very broad heart-fhaped *ftipulas*, and the fmaller, more ovate, *bracteas*, give a peculiar character to this fpecies. *Inflorefcence* rather racemofe than panicled, deftitute of hairinefs or fpines, though the *branches* of the ftem are armed with ftrong prominent prickles. *Heads* of a few white *flowers*, each on a long ftalk, folitary or in pairs. *Legume*, according to Plumier's figure, linear-oblong, flat, ftraight, deftitute of prickles at the edges, acute, about three inches long and one broad. *Seeds* numerous, oval.

A. *acantholoba*. American Prickly-podded Acacia. Willd. n. 95.—"Branches prickly. Leaves doubly pinnate; firft divifion of three pair; fecond of ten pair; leaflets linear, obtufe; downy beneath. Heads globofe, nearly feffile, racemofe. Legume prickly at the edges."—Gathered in South America, by the celebrated travellers Humboldt and Bonpland. *Branches* round. *Leaflets* ten or eleven pair, clothed beneath with clofe-preffed hairs. *Footftalks* downy. *Prickles* fcattered, hooked, compreffed. *Heads* fmall, almoft feffile, difpofed in a terminal clufter. *Legume* an inch and a half in length, oblong, flat, membranous, fmooth, befet with prickles at the margin. *Willdenow.* This author declares himfelf to have been poffeffed of feveral fpecimens of the *Mimofa* tribe, which were too imperfect to be enumerated or defined. We are not only in this fituation, but we have feveral in fufficiently good condition, which on account of the incomplete defcriptions of authors, efpecially concerning the *fruit*, we cannot afcertain to be defcribed or not.

ACADEMY. The *Academy of Arts* at Peterfburg was eftablifhed by the emprefs Elizabeth in 1758, and annexed to the Academy of Sciences. At the fuggeftion of count Shuvalof, the late emprefs Catharine, in 1764, formed it, &c. Next col. after l. 54, add,

The academy of painting, fculpture, and architecture, at Vienna, was founded in the year 1705.

Under *Academies of Nonconformift Minifters*, inftead of Manchefter *r.* York, *dele* Exeter, and inftead of Wrexham *r.* Llanfylling.

ACÆNA, in *Botany*, ακαινα, *a thorn*, alluding to the prickly fruit. This genus, fuppofed to confift of only one fpecies, was defcribed by Mutis, who communicated his account of it to Linnæus, without any fpecimen, and it was publifhed in Linn. Mant. 2. 145, 200. Some time afterwards Forfter founded his *Anciftrum*, Forft. Nov. Gen. t. 2, feveral fpecies of which have been defcribed by the younger Linnæus, Lamarck, and other writers. (See ACÆNA and ANCISTRUM.) Vahl firft difcovered thefe to be one and the fame genus, and has greatly added to the number of fpecies. We fhall extract from his work a compendious view of the whole.—Vahl Enum. v. 1. 293. Linn. Mant. 2. 145. Schreb. Gen. 87. Willd. Sp. Pl. v. 1. 693. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 67. Juff. 336. (Anciftrum; Forft. Gen. t. 2. Linn. Suppl. 10. Schreb. Gen. 25. Willd. Sp. Pl. v. 1. 154. Mart. Mill. Dict. v. 1. Juff. 336. Lamarck Illuftr. t. 22. Gærtn. t. 32.)—Clafs and order, *Diandria Monogynia*. Nat. Ord. *Senticofæ*, Linn. *Rofaceæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, turbinate, permanent, with four teeth, each fometimes tipped with an upright briftly awn, barbed at the point, or the whole body of the calyx is fo armed. *Cor.* Petals four, roundifh, inferted into the border of the calyx, and fhorter than its awns. *Stam.* Filaments two or four, thread-fhaped, longer than the petals, inferted into the border of the calyx; anthers roundifh. *Pift.* Germen fuperior, oblong; ftyle thread-fhaped; ftigma many-cleft, tufted. *Peric.* none, except the permanent calyx. *Seed* folitary, ovate, coated with the thickened bafe of the calyx.

Eff. Ch. Calyx of one leaf, armed with barbed briftles. Petals four, inferted into the calyx. Stigma tufted. *Seed* folitary, coated with the calyx.

Obf. The *petals* are fometimes wanting. *Flowers* occafionally five-cleft, with five *ftamens*. The *ftem* is herbaceous, or fometimes fhrubby. *Leaves* alternate, pinnate with an odd one, deeply ferrated or cut, often hairy or filky; their common *footftalks* fheathing, bordered with a pair of membranous

branous combined *ſtipulas*. *Flowers* ſmall, greeniſh, in a globoſe head, or interrupted ſpike. *Fruit* reddiſh, dry.

1. A. *lappacea*. Bur Acæna. Vahl n. 1. "Fl. Peruv. v. 1. 66. t. 103. f. *a*."—"Leaflets oblong, ſerrated. Flowers racemoſe. Fruit all over prickly. Stem erect."—Native of craggy ſunny ſpots in the diſtrict of Tarma, Peru. *Stems* rather ſhrubby, numerous, a foot high, ſlightly branched, round, villous. *Leaflets* four pair, deeply ſerrated, hairy; becoming ſmooth by culture. *Flower-ſtalks* axillary, four times as long as the leaves, bearing from five to ſeven diſtant, ſtalked *flowers*.

2. A. *elongata*. Mutiſian Acæna. Linn. Mant. 200. Vahl n. 2. Willd. Sp. Pl. v. 1. 693.—Leaflets oblong, ſerrated; downy beneath; bearded at the tips of the ſerratures. Spikes elongated, compreſſed. Fruit all over prickly. Stem nearly erect.—Found in Mexico, by the celebrated Mutis. *Stem* woody, perennial, with very long, aſcending, ſomewhat compound branches, two feet in length. *Leaves* ſcattered; *leaflets* ſeſſile, crowded; the lower ones very ſmall, linear, acute, entire; from four to eight of the upper pair larger, oblong, ſerrated. *Spikes* axillary, erect, rigid, a ſpan long. *Bracteas* ſolitary, cloſe to the calyx, concave, ovate-oblong. *Flowers* alternate, nearly ſeſſile. *Mutis*.

3. A. *latebroſa*. Hairy Acæna. Vahl n. 3. Ait. n. 1. (Anciſtrum latebroſum; Willd. Sp. Pl. v. 1. 155. A. decumbens; Thunb. Prodr. 6. Agrimonia decumbens; Linn. Suppl. 251.)—Leaflets oblong, cut, hairy. Stem creeping. Spikes elongated, ſtalked, many-flowered.—Native of the Cape of Good Hope. The *germen* is downy, beſet with many barbed prickles, which, as the *fruit* ripens, project through the ſkin of the *calyx*. See Gærtner f. 2, and Lamarck f. 4.

4. A. *pinnatifida*. Deep-cut Acæna. Vahl n. 4. "Fl. Peruv. v. 1. 68. t. 104. f. *b*."—Leaflets oblong, deeply ſerrated, almoſt pinnatifid; hairy beneath. Spikes cylindrical. Stem erect.—Found on dry expoſed hills in Chili. Commerſon gathered what appears to be the ſame, at Monte Video, not, as Vahl by miſtake ſays, at the ſtraits of Magellan. The *ſtem* is quite ſimple, a ſpan high, leafy, very hairy in the upper part. *Leaves* numerous at the root, and ſeveral on the ſtem, with eight or nine pair of *leaflets*, beſides the odd one; the largeſt near an inch long, copiouſly and deeply cut, like *Potentilla anſerina*. *Spike* obtuſe, an inch or inch and half long, denſe, many-flowered, dark purple. *Germen* beſet with ſtrong barbed thorns, not proceeding from its teeth.

5. A. *Sanguiſorbæ*. Burnet-leaved Acæna. Vahl n. 5. Ait. n. 2. (Anciſtrum Sanguiſorbæ; Linn. Suppl. 89. A. diandrum; Forſt. Prodr. 10. A. anſerinæfolium; Forſt. Gen. 2. Lamarck Illuſtr. v. 1. 76. t. 22. f. 1.)—Leaflets obovate, deeply ſerrated; ſilky beneath. Spikes globoſe. Stem decumbent. Calyx-teeth awned.—Native of New Zealand, Terra del Fuego, and Staten-land. Introduced into Kew garden by ſir J. Banks, in 1796. Perennial and hardy, flowering in June. The *ſtems* are a ſpan or more in length. *Leaves* reſembling Burnet; ſmooth above. *Heads* of *flowers* globoſe, denſe, on long ſtalks.

6. A. *ovalifolia*. Oval-leaved Acæna. Vahl n. 6. "Fl. Peruv. v. 1. 67. t. 103. f. *c*." Ait. n. 3. (Anciſtrum repens; Venten. Jard. de Cels, t. 6.)—Leaflets elliptic-oblong; villous beneath. Spikes globoſe. Stem creeping. Calyx-teeth awned. Stigma unilateral.—Native of Peru, in moiſt ſhady places. Cultivated at Paris, by the late M. Cels, and at Kew by Mr. Aiton, where it is hardy, flowering in May and June. We can diſcover no difference between this and the foregoing, the *ſtigma* being perhaps accidentally imperfect.

7. A. *argentea*. Silvery Acæna. Vahl n. 7. Fl. Peruv. v. 1. 67. t. 103. f. *b*. (Proquin; Feuill. Voy. v. 3. 55. t. 41.)—Leaflets elliptic-lanceolate, acute, ſerrated; ſilky beneath. Spikes globoſe. Stem creeping.—Native of Chili, in moiſt ground. The Indians uſe it as a vulnerary. The *branches* are two feet long. *Leaves* ſhining and ſmooth above; ſilvery beneath. *Flowers* in globular heads, on long ſtalks. *Stamens* two or four. *Calyx* with two, three, or four terminal awns.

8. A. *lucida*. Shining Deep-cut Acæna. Vahl n. 8. Ait. n. 4. (Anciſtrum lucidum; Willd. Sp. Pl. v. 1. 155. Lamarck Illuſtr. v. 1. 77. t. 22. f. 3.)—Leaflets in three or five deep oblong ſegments; hairy beneath. Spikes oblong. Stem almoſt buried.—Native of the Falkland iſlands, from whence Dr. Fothergill procured it in 1777. Commerſon gathered the ſame in the ſtraits of Magellan. The *ſtems* run juſt under the ſurface of the ground, ſending up numerous leafy tufts. *Leaves* linear-oblong, of many pairs of ſmall, elliptic-oblong, deeply divided *leaflets*. *Spikes* partly interrupted. *Fruit* reddiſh, ſmooth, entirely unarmed, as well as the *calyx*, in our ſpecimens. Vahl attributes four awns to the latter.

9. A. *trifida*. Three-cleft Acæna. Vahl n. 9. Fl. Peruv. v. 1. 67. t. 104. f. *c*.—"Downy and hoary. Leaflets wedge-ſhaped, in three or five ſegments. Spikes globoſe. Stem erect."—Native of paſtures, fields, and hills in Chili. Denſely villous. *Stems* ſeveral, unequal, the longeſt meaſuring about a foot. *Leaflets* ſeven or eight pair; the lowermoſt often undivided. *Flower-ſtalks* terminal, often bearing one or two little round heads, beſides the principal one. *Bracteas* linear. *Calyx* ſometimes five-cleft. *Stamens* two to five. *Fruit* obovate, denſely villous, with four or five angles, and as many awns. *Vahl*.

10. A. *magellanica*. Magellanic Acæna. Vahl n. 10. (Anciſtrum magellanicum; Lamarck Illuſtr. v. 1. 76. t. 22. f. 2.)—Leaflets obovate, deeply ſerrated, three-cleft; hoary beneath. Spikes globoſe. Stem erect, ſmooth.—Gathered by Commerſon, at the ſtraits of Magellan. *Stems* rather ſhrubby, three or four inches high, branched, ſmooth; ſometimes hoary at the ſummit. *Leaves* at the ends of the branches: leaflets five or ſix pair, ſcarcely half the length of the nail; the uppermoſt with ſeven or nine teeth, lower with about three, loweſt of all entire. *Flower-ſtalks* axillary, at the top of each branch, erect, purpliſh, ſlightly villous at the upper part. *Head* twice the ſize of a pea. Very nearly akin to the laſt, but the ſmoothneſs of the *ſtem*, *branches* clothed with imbricated baſes of the *footſtalks*, crowded *leaves*, and ſmooth *bracteas*, diſtinguiſh this ſpecies. *Vahl*.

11. A. *adcendens*. Aſcending Smoothiſh Acæna. Vahl n. 11. (A. lævigata; Ait. n. 5? Anciſtrum magellanicum *β*; Lamarck Illuſtr. v. 1. 76.)—Leaflets oblong or obovate, ſerrated, nearly ſmooth. Spikes globoſe. Stem decumbent.—Gathered by Commerſon at the ſtraits of Magellan. We do not find any ſpecimen from him in the Linnæan collection; but Mr. Menzies has communicated ſome, by the name of *Anciſtrum alpinum*, which appear to anſwer to Vahl's deſcription, except being conſiderably hairy. Theſe were gathered on the ſummits of the mountains near Cape Horn, along with *Viola tridentata*. (See VIOLA n. 76.) Vahl ſpeaks of the *ſtems* as a ſpan long, ſmooth. *Leaflets* from five to ſeven pair, oppoſite or alternate, bluntly ſerrated, veiny, ſomewhat hairy at the rib. *Flower-ſtalks* terminal, elongated. *Head* the ſize of a cherry.

Calyx

Calyx with four awns. The hairinefs of the upper fide of the *leaves* in our plant, and the fmaller fize of the *heads* of *flowers*, may be owing to a very lofty or expofed fituation. We merely guefs this to be Mr. Aiton's *lævigata* from the fynonym of Lamarck.

12. A. *cylindriftachya*. Cylindrical-fpiked Acæna. Vahl n. 12. "Fl. Peruv. v. 1. 68. t. 104. f. *a*."—"Leaflets oblong, ferrated; filky beneath. Spikes cylindrical, on nearly radical ftalks. Stems fubterraneous."—Found on hills in Tarma, Peru. *Herb* clothed with filky pubefcence. *Leaves* radical, numerous; leaflets ten or eleven pair, obtufe, furrowed. *Flower-ftalks* feveral, from three to nine inches high, bearing a few fimple leaves. *Calyx* purplifh, with four awns. *Stamens* two.

13. A. *pumila*. Smooth Dwarf Acæna. Vahl n. 13.—Leaflets oval, convex, ferrated, very fmooth; polifhed on the upper fide. Flower-ftalks almoft radical. Spikes cylindrical.—Gathered by Commerfon at the ftraits of Magellan, and by Mr. Menzies in Staten-land, near Cape Horn. The *root* is tuberous. *Stems* very fhort, or fcarcely any. *Leaflets* about twelve pair, with blunt revolute teeth; veiny on both fides; paler and opaque beneath. *Flower-ftalk* flightly leafy. *Spike* interrupted in the lower part. *Germen* befet with very numerous little barbed briftles.

ACALZIKE. After Tartary, add: the capital of *Akifka* (which fee); a populous and commercial city, fituated in an open valley, on the left bank of the Kur. The inhabitants are, Jews, Turks, Greeks, Armenians, and Georgians.

ACANTHI, in *Botany*, Juffieu's third natural order of his eighth clafs, or the thirty-fixth of his general feries, named from the moft celebrated and confpicuous genus which it contains. For the character of the clafs, fee GENTIANÆ. The *Acanthi* are thus defined.

Calyx divided, permanent, often bracteated. *Corolla* moftly irregular. *Stamina* either two; or four, two of which are fhorter than the others. *Style* folitary; with a two-lobed, rarely fimple, *ftigma*. *Fruit* capfular, of two cells, often many-feeded, with two elaftic valves, and a partition contrary, or oppofite, thereto, inferted into their middle, fplitting from top to bottom into two uninterrupted *receptacles*, bearing feeds on each fide, rendering the valves femibilocular. *Stem* either herbaceous or fhrubby. *Leaves* for the moft part oppofite, as well as the *flowers*.

Sect. 1. *Stamens four, in unequal pairs.*

This contains *Acanthus* of all authors; *Dilivaria* of Juffieu, founded on *Acanthus ilicifolius* of Linnæus; but furely on the flighteft poffible characters; *Blepharis* of Juffieu; *A. maderafpatenfis* of Linnæus, as flightly diftinguifhed; *Thunbergia* of Linn. Suppl.; *Barleria;* and *Ruellia*.

Sect. 2. *Stamens only two.*

Jufticia and *Dianthera*.

Mr. Brown, who retains this order by the name of *Acanthaceæ*, Prodr. Nov. Holl. v. 1. 472, has enriched it with many valuable remarks, and fome new genera. He combines, like Profeffor Vahl, *Dianthera* with *Jufticia*, but extracts from the latter the *Hypoeftes* of Solander; with *Eranthemum*, originally founded by Linnæus; and eftablifhes moreover two genera of his own by the names of HYGROPHILA and NELSONIA. (See thofe articles.) We perceive alfo that this intelligent writer retains Vahl's *Elytraria*. He propofes alfo *Aphelandra*, confifting of *Jufticia pulcherrima* and its allies; *Aetheilema*, founded on Forfkall's *Ruellia imbricata*, and various undefcribed Eaft Indian and African fpecies, of which therefore we can give no account. LEPIDAGATHIS of Willdenow, Sp. Pl. v. 3. 400, of which we propofe to fpeak hereafter, is admitted by Mr. Brown, as well as a new genus of Juffieu's named *Blechum*. Some others are lefs diftinctly indicated. We felect from the work of our learned friend the following additional obfervations upon the *Acanthi*, or *Acanthaceæ*.

The *anthers* are either of two cells, fometimes equal, fometimes unequal in their infertion, or of only one cell; and burft longitudinally. *Germen* furrounded at the bafe with a glandular difk. *Seeds* roundifh, moftly fubtended by *retinacula*, props, or awl-fhaped afcending proceffes from the partition. *Skin* of the feed lax. *Albumen* invariably none. *Embryo* either curved or ftraight. *Cotyledons* large, nearly orbicular. *Plumula* inconfpicuous. Thefe plants are chiefly tropical. Their pubefcence, if any, is fimple, occafionally capitate, very rarely ftarry. *Leaves* oppofite, rarely four in a whorl, without *ftipulas*, fimple, undivided, either entire or ferrated; feldom finuated, or flightly lobed. *Inflorefcence* terminal or axillary, fpiked or racemofe, fafciculated, panicled, or folitary. The order is certainly natural, though not eafily to be defined. In fome inftances the props of the *feeds* are wanting. The rudiments of a fifth ftamen frequently occur. The elaftic mode of burfting in the *capfule* is nearly univerfal.

The following principles by which the genera are to be difcriminated, are thus propofed by Mr. Brown in fucceffion, according to their relative importance. 1. Seeds with or without props. 2. Partition combined with the valves or feparate. 3. Anthers of two cells or of one. 4. Anther-bearing ftamens two or four. 5. Limb of the irregular corolla with one lip or two. 6. Calyx equal or unequal. Cells of the capfule containing each two or more feeds. The following is the order of Mr. Brown's genera. *Hypoeftes*, *Jufticia*, *Eranthemum*, *Ruellia*, *Hygrophila*, *Acanthus* including *Dilivaria* of Juffieu, and *Nelfonia*, which may be found in their proper places.

ACANTHONOTUS, in *Ichthyology*, a genus of fifh, whofe characters are, that the body is elongated, without dorfal fins, and that it has feveral fpines on the back and abdomen. There is one fpecies, a native of the Eaft Indies, defcribed by Bloch under the name of

NASUS; Snouted Acanthonotus, which is grey, with the back tranfverfely barred with brown. This fifh is of confiderable length, that defcribed by Bloch being two feet and a half: the head is large, the teeth fmall, forming a row along each jaw, the eyes large, and the noftrils confpicuous; the body, moderately wide for about a third of its length, tapers towards the extremity; head and body are covered with fcales, of a blueifh tinge, filvery on the abdomen; the pectoral fins brown, of a moderate fize, the ventral of like colour, and fmall; the lateral line ftraight, nearer to the back than to the abdomen; with ten fpines, ftrong but fhort, along the narrow part of the back, and towards the abdomen from twelve to thirteen others, followed by the anal fin, which is fhallow, and continued into the tail, which is very fmall. Shaw's Gen. Zool.

ACANTHURUS, a genus of fifh, confifting of fuch fpecies of the Linnæan genus *Chætodon* (which fee) as, in contra-diftinction to the principal character of that genus, have, in general, moderately broad and ftrong teeth, rather than flender and fetaceous ones; they are alfo furnifhed on each fide of the tail with a ftrong fpine. Their generic character is as follows: Teeth fmall, in moft fpecies lobated; tail aculeated on each fide; habit and general appearance as in the chætodon. The fpecies are,

UNICORNIS. Grey-brown, with a frontal horn ftretching

ing forwards over the snout, and two spines on each side of the tail. See CHÆTODON *Unicornis*.

NASUS. Grey, speckled with black, with a rounded frontal tubercle, and two spines on each side of the tail. A native of the Indian seas, and, according to Cepede, first described by Commerson.

TEUTHIS. Blue, with the middle of the body paler, and a spine on each side of the tail. See TEUTHIS *Hepatus*.

CHIRURGUS; Lancet Acanthurus. Orange-yellow, with the body crossed on the hind part by transverse brown stripes, and a spine on each side of the tail. See CHÆTODON *Chirurgus*.

NIGRICANS. Blackish, sub-argenteous beneath, with a spine on each side of the tail. See CHÆTODON *Nigricans*.

MILITARIS. Brown, with rhombic-ovate body, and strong spine on each side of the tail. Native of the Indian and American seas.

TRIOSTEGUS; Triradiated Acanthurus. Greenish-brown, with four transverse dusky bands, and a spine on each side of the tail. Native of the Indian seas. See CHÆTODON *Triostegus*.

HARPURUS; Guarded Acanthurus; Rhombic-ovate brown Acanthurus, with extremely minute scales, and two spines on each side of the tail. Native of the Indian seas.

SOHAL; Dusky Acanthurus, with longitudinal violet streaks, and two spines on each side of the tail imbedded in a red depression. See CHÆTODON *Sohal*.

NIGRO-FUSCUS; Dusky Acanthurus, with ovate body, and spine on each side of the tail. A variety of the preceding. See CHÆTODON *Nigro-fuscus*.

ACHILLES; Brown, ovate Acanthurus, with a bare ovate red spot on the hind part, aculeated in the middle.

LINEATUS; Ovate-brown Acanthurus, with numerous longitudinal white stripes, and spine on each side of the tail. See CHÆTODON *Lineatus*.

UMBRATUS; Brown-ovate Acanthurus, with extremely minute scales, and a spine on each side of the tail. Native of the Indian seas.

MELEAGRIS; Blackish-brown Acanthurus, thickly marked with round white spots, and spine on each side of the tail. Native of the Indian and American seas.

VELIFER; Broad-finned, whitish Acanthurus, with roundish-ovate body, marked by numerous brown transverse bands, and spine on each side of the tail. Native of the American seas. Shaw's Zool.

ACANTHUS, in *Botany*. In addition to the observations of our predecessor, we would remark, what the writer of the present article has elsewhere hinted, (*Considerations respecting Cambridge, more particularly relating to its Botanical Professorship*, 37,) that every mention of this plant in Virgil accords with the Common Holly, *Ilex Aquifolium*, so far, at least, as the words of the poet indicate any thing in particular. The passages in question are,

——— *baccas semper frondentis acanthi.*—Georg. 2. 119.
——— *aut flexi tacuissem vimen acanthi.*—Ib. 4. 123.
Ille comam mollis jam tum tondebat acanthi.—Ib. 4. 137.
Et molli circum est ansas amplexus acantho.—Ecl. 3. 45.
Mixtaque ridenti colocasia fundet acantho.—Ib. 4. 20.
—— *circumtextum croceo velamen acantho.*—Æn. 1. 653.
——— *pictum croceo velamen acantho.*—Ib. 1. 715.

The flexible twigs, ever-green leaves, bright or gay saffron-coloured berries, (as the term *croceus* is used with considerable latitude by Latin writers,) the head of the plant being clipped by gardeners in the early spring, all sufficiently well apply to the Holly, which is a common wild, as well as garden, shrub, throughout Italy, but of which we can find no mention whatever in all Virgil's writings, if these passages allude to any thing else. They are acknowledged to be inapplicable to the ακανθα of Dioscorides, which is evidently the Linnæan *Acanthus*. They are no less so to the ακανθος of Theophrastus, which is a tree bearing pods, or legumes. These Greek names, simply meaning a thorny or prickly plant, are variously applied, not only to different trees or shrubs, but to many kinds of thistles. The *Acanthus Dioscoridis*, Linn. Sp. Pl. 891, a species adopted by Linnæus from other writers, without seeing a specimen or figure, seems to be merely a narrow-leaved, or starved state of *A. spinosus*; of which *A. mollis* may, on the other hand, be a cultivated, or more luxuriant, variety. The latter was found by Dr. Sibthorp in Sicily, not in Greece; the former, apparently the natural state of this herb, as described by Dioscorides, occurs in moist stony places, as well as about the borders of fields, in the southern part of Greece, and the islands of the Archipelago, and is very common in Crete.

ACARNA, a name adopted from the Greeks, whose ακαρνα was, like this, some sort of thistle. This name is now applied in Willdenow's Sp. Pl. v. 3, 1699, and from thence by Mr. Aiton, Hort. Kew. v. 4. 490, to a genus separated by these writers from the Linnæan ATRACTYLIS (see that article); from which it differs in the want of a radius. The species referred to *Acarna* are, 1. *Atractylis gummifera* of Linn. Sp. Pl. 1161; 2. *A. macrocephala*, Desfont. Atlant. v. 2. 253; 3. *A. macrophylla*, ibid. 255. t. 226; 4. *A. cæspitosa*, ibid. 254. t. 225; 5. *A. lancea*, Thunb. Jap. 306; 6. *A. ovata*, ibid. 306; and 7. *A. cancellata*, Linn. Sp. Pl. 1162.—We can by no means concur in this alteration. Nothing is less certain than such a generic distinction as the above, when unsupported by any natural character. Willdenow has also separated from *Atractylis* the *purpurata* and *mexicana* of Linnæus, perhaps with more propriety, their receptacles being nearly naked, and their seed-down simple, to say nothing of a difference in the structure of the radiant florets of the former, which rather invalidates than confirms the new-established genus. See ONOSERIS.

ACCELERANDO, l. 11, *r.* refinements.

ACCENT, in *Music*, col. 2, l. 7, *r. stessa*; l. 53, *r.* winds on your wings, &c.; l. 48, for using *r.* bowing.

ACCIACATURA, l. 13, *r.* Prattico; l. 14, Cimbolo; l. 22, *r.* reprinted.

ACCOMACH, or ACCOMACK, l. 3, *r.* contained in 1810 15,743; l. 4. *r.* 4542.

ACCOMMODATION, in *Commerce*, a term applied to the acceptance of a bill, when the drawee only lends his name, and the drawer engages to furnish him with the means of payment before the bill becomes due.

ACCOMPANIMENT, col. 4, l. 13, *r. scuopre*; l. 21, *r.* leave for have.

ACCOUNT CURRENT, the personal account of a merchant or trader with each of his correspondents or customers, a copy of which account is transmitted to the person whose name it bears, shewing the state of affairs between the parties at the current or present time when made out.

ACCURSIUS, *r. Mariangelus*.

ACER, l. 6, *r. Tribilatæ Acera*. Juss.

ACERA, in *Botany*, the sixth natural order, of the 13th class in Jussieu's system; the 66th in his general series. See the characters of this class under the article GERANIA. The *Acera* are defined as follows.

Calyx of one leaf. *Petals* definite, very rarely wanting, inserted around the disk, which is under the germen. *Stamina* inserted into the middle of the same disk, definite, but often

often unequal in number to the petals. *Germen* ſimple, ſtanding on the before-mentioned diſk; *ſtyle* one, or rarely two; *ſtigma* one or two. *Fruit* of ſeveral cells, or ſeveral capſules, the cells or capſules three or two. *Seeds* in each ſolitary, or at the utmoſt three, attached to the inner angle, ſome of them frequently abortive. *Corculum* deſtitute of *albumen*, the *radicle* lying on the lobes. *Stem* arboreous, or ſhrubby. *Leaves* oppoſite, without *ſtipulas*. *Flowers* raceinoſe or corymboſe; ſometimes by the abortion of one or other part becoming ſeparate in ſex.

Sect. 1. *Fruit of ſeveral cells*, contains only *Aeſculus*.

Sect. 2. *Fruit of ſeveral capſules*, only *Acer*.

Sect. 3. Conſiſts of genera allied on the one hand to the *Acera*, on the other to MALPIGHIÆ; ſee that article. Theſe are *Hippocratea* and *Thryallis*.

There is ſome doubt, even in the mind of Juſſieu himſelf, whether *Aeſculus* properly belongs to this natural order; and he juſtly adverts to its great affinity to his SAPINDI, (ſee that article,) with which its fruit undoubtedly very cloſely accords.

ACERAS, ſo named from *α*, *without*, and *κερας*, *a horn*, alluding to the want of a nectariferous ſpur to the lip.—Brown in Ait. Hort. Kew. v. 5. 191. Sm. Compend. Fl. Brit. ed. 2. 128.—Claſs and order, *Gynandria Diandria*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth ſuperior, of three ovate, concave, equal, converging leaves. *Cor.* Petals two, linear-lanceolate, concealed by the calyx, and about the ſame length. Nectary an oblong, flat, pendulous lip, much longer than the petals, with two pair of deep, linear, flat, dependent lobes, but no poſterior ſpur. *Stam.* Filament none; anther erect, oblong, attached by its back, parallel to the ſtyle, of two cells, opening in front, the maſſes of pollen club-ſhaped, each attaching itſelf, by a taper baſe, to two glands in a ſingle pouch near the ſtigma. *Piſt.* Germen inferior, linear-oblong, twiſted; ſtyle columnar, very ſhort; ſtigma below the anther, rather concave. *Peric.* Capſule oblong, with three blunt angles, twiſted, of one cell and three valves, ſplitting by three lateral fiſſures. *Seeds* numerous, minute, each with a chaffy tunic.

Eſſ. Ch. Calyx converging. Lip without a ſpur, flat. Anther nearly terminal, fixed to the ſtyle, of two cells.

This genus was firſt eſtabliſhed by Mr. Brown, who ſeparates it from OPHRYS, (ſee that article,) on account of the converging *calyx*, and eſpecially the ſituation of the two glands, which receive the *pollen*, being in one pouch, not in two diſtinct and diſtant ones. The latter character, though excellent in this inſtance, appears to us in others leſs ſatisfactory (ſee GYMNADENIA hereafter); and even in the characters of *Aceras* and *Ophrys*, the flat lip of the former, contraſted with the convex one of the latter, ſeems a more obvious and natural diſtinction. In affinity the preſent genus comes neareſt to ORCHIS, but wants the ſpur.

1. A. *anthropophorum*. Green-man Aceras. Br. n. 1. Sm. Compend. 130. (Ophrys anthropophora; Linn. Sp. Pl. 1343. Willd. Sp. Pl. v. 4. 63. Sm. Fl. Brit. 937. Engl. Bot. t. 29. Curt. Lond. faſc. 6. t. 66. O. n. 1264; Hall. Hiſt. v. 2. 133. t. 23. O. anthropophora oreades; Column. Ecphr. 318. t. 320. f. 1. O. flore nudi hominis effigiem repræſentans; Rudb. Elyſ. v. 2. 193. f. 6. Vaill. Pariſ. t. 31. f. 19, 20.)—Lip of the nectary longer than the germen.—Native of dry calcareous paſtures, in Italy, France, Switzerland, and England, flowering in June. The *root* conſiſts of two roundiſh-ovate, nearly equal, downy bulbs, or knobs. *Herb* ſmooth, of a bright, ſlightly glaucous, green, about ten or twelve inches high. *Leaves* ſeveral, ovato-lanceolate, all radical, except one which ſheaths the lower part of the ſtalk. *Spike* erect, of numerous rather ſcattered *flowers*. *Calyx* convex, green, with reddiſh-brown edges. *Petals* green, erect. *Lip* pale yellow, pendulous, near an inch long, in four narrow, rather ſpreading lobes, of which the two lowermoſt are uſually the ſhorteſt; the whole flower having nearly the ſhape of *Orchis militaris*, except the want of a ſpur, and of a ſmall central lobe, often obſervable in that plant. We have found at Valcimara, on the Apennines, what ſeems a mere variety with a red *lip*.

2. A. *anthropomorphum*. Short-lipped Aceras. (Ophrys anthropomorpha; Willd. Sp. Pl. v. 4. 63.)—Lip but half the length of the germen.—Found on hills in Portugal, by profeſſor Linck. About a ſpan high, the *ſpike* an inch long. *Bracteas* oblong, membranous, half the length of the germen, nor does the lip exceed that proportion. Willdenow thinks it can ſcarcely be a variety of the former. We have ſeen no ſpecimen.

ACERIC ACID, in *Chemiſtry*, lately diſcovered by profeſſor Scherer, of Vienna, in the ſap of the *acer campeſtre*, or common maple. Its properties have been very imperfectly deſcribed. The acerate of lime is white, ſlightly tranſlucent, has a weak acidulous taſte, and is not altered by expoſure to the atmoſphere. 1000 parts of cold water diſſolve 9 parts, and 1000 parts of boiling water 17 parts of this ſalt. Schweigger's Journal, iv. Thomſon's Chemiſtry, iv. new edition.

ACETATES, or ACETITES, a claſs of ſalts, the characteriſtics of which are, that they are all very ſoluble in water; that they are decompoſed by the action of heat; and that they afford acetic acid when diſtilled with ſulphuric acid. Accordingly we have acetates of barytes, of potaſh, of ſoda, of lime, of ammonia, of magneſia, &c. See ACETIC *Acid*.

ACETIC ACID. It is now univerſally admitted by chemiſts, that the acetic acid differs in no reſpect from common vinegar, or what was formerly termed *acetous* acid, but in the degree of concentration only. This opinion, firſt advanced by Adet, has lately been fully confirmed by the experiments of Darracq and Prouſt. What has been ſaid, therefore, on the ſubject of *acetous* acid and *vinegar* in the Cyclopædia, is to be underſtood as applicable to dilute *acetic* acid; and the ſalts termed *acetites* are to be conſidered as *acetates*. The following facts are important, and deſerve a place here.

The ſpecific gravity of acetic acid does not enable us to determine its ſtrength. The ſpecific gravity is ſtated by Dr. Thomſon to be a maximum when the liquid is a compound of one atom, and three atoms water. When the proportion of water is either increaſed or diminiſhed, the ſpecific gravity diminiſhes. Acid compoſed of one atom real acid and one atom water, and acid compoſed of one atom real acid and nine and a half of water, are ſtated by the ſame chemiſt to have the ſame ſpecific gravity.

The following table, drawn up chiefly from the experiments of Mollerat by Dr. T., exhibits the ſpecific gravity of acetic acid of various ſtrengths.

Atoms.		Weight of		
Acid.	Water.	Acid.	Water.	Sp. Gr.
1 +	1	100	14.78	1.0630
	2	100	25.21	1.0742
		100	37.99	1.0770
	3	100	48.43	1.0791
		100	52.94	1.0800
		100	59.38	1.0763
	4	100	71.90	1.0742
	5 —	100	83.90	1.0728
	6 +	100	116.25	1.0658
	7	100	127.73	1.0637
	$9\frac{1}{2}$	100	166.34	1.0630

Acetic

Acetic acid of the ſp. gr. 1.063 is the ſtrongeſt that can be procured. It cryſtallizes at the temperature of 55°, and the cryſtals melt ſlowly when heated to $72\frac{1}{2}$°. This had been long ago obſerved by Courtenvaux. Lowitz has propoſed an ingenious method of obtaining it of the requiſite degree of ſtrength to cryſtallize. This conſiſts in making diſtilled vinegar into a thick paſte with well-burnt charcoal, and expoſing the mixture to a temperature of 212°. The watery part is driven off, and the acid remains. The acid itſelf may be ſeparated by a higher degree of heat, and thus obtained in a very concentrated ſtate. It is commonly neceſſary, however, to repeat the proceſs before it can be made to cryſtallize.

Mr. Chenevix, by diſtilling the *acetates*, obtained a peculiar ſubſtance different from acetic acid, and which he has denominated *pyro-acetic* ſpirit. The acetates of potaſh and ſoda gave a greater proportion of this principle than any of the metalline acetates; but when the acetate of barytes is diſtilled, the whole liquid product conſiſts of this ſpirit without any mixture of acid whatever. No other genus of ſalts tried, ſuch as the oxalates, tartrates, or citrates, yielded this ſpirit, nor was acetic acid converted into it by heat.

Pyro-acetic ſpirit is a white and limpid fluid. Its taſte is at firſt hot and acrid, but it becomes cooling and rather urinous. Its ſmell is peculiar, and is compared by Mr. Chenevix to that of a mixture of oil of peppermint and bitter almonds. Its ſpecific gravity is .7864. It burns with a flame, white exteriorly, but of a fine blue within, and leaves no reſidue. It boils at a temperature of 165°. It mixes with water, alcohol, and volatile oils, in any proportion. With hot olive-oil it alſo mixes in any proportion; but with that oil cold it only mixes in certain proportions. When hot it diſſolves wax and tallow. It diſſolves alſo a little ſulphur and phoſphorus, and is an excellent ſolvent of camphor. It diſſolves potaſh, and becomes dark-coloured, but it may be obtained again unaltered by diſtillation. Strong ſulphuric acid blackens and decompoſes it. Nitric acid renders it yellow, and changes its properties. Muriatic acid renders it brown. When diſtilled with this acid a combination takes place, and a ſubſtance is formed poſſeſſing very different properties from muriatic ether. Theſe properties are ſufficient to ſhew, that the pyro-acetic ſpirit is a diſtinct ſubſtance, and differs entirely from alcohol, ether, and volatile oils. Of courſe, therefore, as Dr. Thomſon obſerves, it deſerves a diſtinct place among compound combuſtibles.

Many attempts have been made to analyſe the acetic acid. Thoſe moſt worthy of notice are by Gay Luſſac and Thenard, and Berzelius. The former burnt a mixture of acetate of barytes and chlorate of potaſh. The reſults were carbonic acid and water. Berzelius's analyſis was made on the ſame principles, but the ſalt he employed was ſuppoſed to be quite free from water. The following are the reſults of theſe celebrated chemiſts:

	Hydrogen.		Carbon.		Oxygen.		Acid.
Gay Luſſac	5.629	+	50.224	+	44.147	=	100
Berzelius	6.35	+	46.83	+	46.82	=	100

If, with Dr. Thomſon, we conſider the reſults of Berzelius moſt entitled to credit, acetic acid conſiſts of

3	atoms or proportions of hydrogen, weighing		0.375
4	——— of carbon	———	3.000
3	——— of oxygen	———	3.000

Or of ten atoms or proportions, and the weight of an integrant particle, will be 6.375; and this weight, as the ſame chemiſt has ſhewn, accords very well with the conſtitution of the acetates.

ACHARIA, in *Botany*, a genus dedicated by Profeſſor Thunberg, to the honour of his countryman Dr. Eric Acharius, knight of the order of Waſa, a member of various learned ſocieties, and one of the moſt diſtinguiſhed botaniſts of the preſent day, particularly with regard to the *Lichen* tribe, which he has profoundly ſtudied, and moſt learnedly illuſtrated. (See Lichenes.) Dr. Acharius is now Regius Profeſſor of Phyſic, at Vadſtena, in Sweden.—Thunb. Prodr. præf. n. 7. Willd. Sp. Pl. v. 4. 327. Lamarck Illuſtr. t. 755.—Claſs and order, *Monoecia Triandria*; or rather, perhaps, *Triandria Monogynia*. Nat. Ord. *Eleagni*, Juſſ.?

Gen. Ch. *Cal.* Perianth inferior, of two ſmall, ovate, acute, permanent leaves. *Cor.* of one petal, tubular-bell-ſhaped, downy, in three deep, equal, elliptical ſegments, permanent. *Stam.* Filaments three, very ſhort, inſerted into the top of the tube of the corolla, oppoſite to its ſegments; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, roundiſh; ſtyle ſolitary, thread-ſhaped, half as long as the corolla; ſtigma three-cleft. *Peric.* Capſule ovate, of one cell, and three valves. *Seed* ſolitary? globoſe, rough. The *ſtamens* are moſt perfect in the upper flowers, the *piſtil* in the lower.

Eſſ. Ch. Calyx of two leaves. Corolla of one petal, three-cleft. Capſule of one cell, and three valves. Seed ſolitary?

Obſ. Nothing can be more imperfect or puzzling than the character and natural affinity of this genus, according to the materials furniſhed by Thunberg, eſpecially what regards the *capſule* and *ſeed*. He defines the fruit, "*capſule* of one cell, with three *ſeeds*." Willdenow, who ſeems to have had no other authority than Thunberg's figure, ſays, "*capſule* of one cell and three valves, with a ſolitary *ſeed*," which laſt account beſt agrees with that figure. With reſpect to the natural order of *Acharia*, if we take for *bracteas* what Thunberg terms a *calyx*, the *flower* will indicate one of Juſſieu's *Eleagni*, though the *capſule* of three valves is very anomalous, and the lobed *leaves* no leſs ſo. By the ſpecific name *tragodes*, or rather *tragioides*, and the place where the genus is introduced, Thunberg appears to have conſidered it as akin to Tragia, (ſee that article,) which idea the aſpect of the *leaves*, and the ſomewhat monoecious *flowers*, might probably ſuggeſt.

1. A. *tragodes*. Lobed Acharia. Thunb. Prodr. 14. t. 1. Fl. Cap. v. 1. 160. Willd. n. 1.—Gathered by Profeſſor Thunberg, near Van Stade's river, and in other parts of the interior of Africa, above the Cape of Good Hope, flowering in December and January. *Root* fibrous, annual? *Stem* ſolitary, herbaceous, erect? from four to twelve inches high, branched from the bottom to the top, ſmooth; *branches* alternate, angular, erect, ſomewhat zigzag, wand-like, ſubdivided. *Leaves* alternate, on ſtalks about their own length, about an inch long, three-lobed, finely downy; lobes obovate, variouſly cut. *Flowers* in effect monoecious, axillary, ſolitary, on ſhort ſtalks, reflexed, ſmall, the male about the upper part of the plant, female lower down. The *corolla* is about a quarter of an inch long, downy all over, as are likewiſe the *germen* and *ſtyle*. *Capſule* ovate-oblong, acute, thrice the length of the permanent corolla. *Seed* nearly the ſize of a pepper-corn, apparently black and rough.

ACHERON, l. 1, *r.* Theſprotia.

ACHILLINI, l. 25, for 40 *r.* 49.

ACHIMENES, in *Botany*, ſo named by Browne, poſſibly fibly from α, and χειμαζω, *to be wintry, or tempeftuous*, meaning that the plants in queftion are not calculated to endure rough weather. He tells us they thrive beft in the cooler parts of Jamaica. When cultivated in Europe, they require great heat. This genus is founded on two fpecies only, and thofe as generically different as two plants of the fame natural order can well be. See Browne's Jamaica, 270. t. 30. f. 1, and Juff. Gen. 119. The latter writer, following Browne, did not diftinguifh thefe plants. One of them is *Columnea hirfuta*, the other our CYRILLA; fee that article.

ACHOR, laft line, *r*. PORRIGO inftead of TINEA *Capitis*.

ACHROCORDES. Add, See SERPENTES.

ACHTIL, ACHTELIEG, or *Martel*, a corn-meafure in Germany, which contains 4 fimmers, 8 metzers, 16 fechters, or 64 gefcheides. See MALTER.

ACIANTHUS, in *Botany*, from ακις, *a point*, and ανθος, *a flower*, becaufe of the briftly tips of the calyx-leaves, unufual in this family.—Brown Prodr. Nov. Holl. v. 1. 321.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth three-leaved, fomewhat ringent, awned; its two fide-leaves placed under the lip; upper one broadeft, vaulted, erect. *Cor.* Petals two, linear-lanceolate, much fmaller than the calyx. Nectary a prominent undivided lip, fhorter than the petals, with two fwellings at the bafe, but no appendage to the difk. *Stam.* Anther terminal, permanent, of two cells clofe to each other; maffes of pollen in each cell four, or two divided ones. *Pift.* Germen inferior, oblong, angular; ftyle erect, femi-cylindrical, without any auricles or wings at the fummit; ftigma in front. *Peric.* Capfule of one cell. *Seeds* numerous, minute.

Eff. Ch. Calyx fomewhat ringent; its fide-leaves under the lip. Lip without a fpur, fhorter than the petals, undivided, with two prominences at the bafe. Anther terminal, without appendages, permanent. Pollen powdery. Column femi-cylindrical.

This genus is next akin to MICROTIS of the fame author (fee that article); to whofe effential character fhould be added, " Anther with two auricles. Column funnel-fhaped."—*Acianthus* confifts of little fmooth herbs, with folitary, undivided, naked, downy *bulbs*, or *tubers*, throwing out a few fibres, along with a downy fhoot, at whofe extremity the young bulb is fituated, on a partial ftalk. *Stem* very fhort, its bafe enclofed in a fhort, tubular, pointed fheath. *Leaf* folitary, deeply heart-fhaped, acute, with three ribs, and many reticulated veins; its under fide red or purple. *Flowers* fmall, reddifh, either cluftered or folitary, their common ftalk without *bracteas*, except beneath each flower.

1. A. *fornicatus*. Vaulted Acianthus. Br. n. 1.—Flowers racemofe. Awns four times fhorter than the perianth. Petals nearly erect. Lip bearing longitudinal glands. Column concealed.—Native of the neighbourhood of Port Jackfon, New South Wales, from whence we, long ago, received fpecimens in fpirits, as well as dried, by favour of Dr. White, and where Mr. Brown has alfo gathered this curious little plant. The *leaf* is about an inch in diameter. Common *flower-ftalk* from three to fix inches high, bearing from two to fix *flowers*, about the fize and afpect of the *Corallorrhiza*, each with an ovate *bractea* at its bafe. Lower leaves of the *calyx* linear-lanceolate, very narrow in comparifon of the upper one. *Petals* linear-lanceolate, very delicate. *Lip* fomewhat flefhy, having a longitudinal furrow, the ridges bearded horizontally with papillary glands. This is the only fpecies we have feen.

2. A. *exfertus*. Prominent Acianthus. Br. n. 2.—" Flowers racemofe. Awns very fhort. Upper calyx-leaf tapering at the bafe. Petals horizontally reflexed. Lip glandular at the extremity. Column prominent."—Gathered by Mr. Brown, near Port Jackfon.

3. A. *caudatus*. Long-awned Acianthus. Br. n. 3.—" Stalk with one or two flowers. Awns very long. Leaf wavy at the margin."—Gathered by Mr. Ferdinand Bauer, in the neighbourhood of Port Jackfon.

4. A.? *bifolius*. Two-leaved doubtful Acianthus. Br. n. 4. (Epipactis reflexa; Labill. Nov. Holl. v. 2. 60. t. 211. f. 1.)—" Stalk fingle-flowered. Leaves two, radical, hooded. Perianth without awns, its three leaves uniform; the lateral ones reflexed. Petals? linear, narrow." —Gathered by Labillardiere, at Cape Van Diemen. Mr. Brown doubts whether this fpecies, which he appears not to have examined, is moft akin to *Acianthus*, or to another genus of his, hereafter to be noticed, named *Chiloglottis*. It agrees with the former in having four maffes of pollen, a column deftitute of a joint, and a lip without any appendage: with the latter in bearing two radical leaves, a perianth without awns, and very narrow petals. Thefe laft are reprefented in the plate, at *fig*. 2, as if fituated on the outfide of the calyx, which the defcription, and, if we miftake not, the other figures, fhew to be an error of the draughtfman or engraver.

ACICARPHA, fo named by the celebrated Juffieu, from ακις, *a point*, and καρφη, *a chaffy fcale*, becaufe the fcales of the receptacle, as he thought, become armed with a fpinous point, when the feeds, which they feparately envelop, approach towards maturity.—Juff. in Annal. du Muf. d'Hift. Nat. v. 2. 347. Willd. Sp. Pl. v. 3. 2327.—Clafs and order, *Syngenefia Polygamia-neceffaria?* Nat. Ord. *Compofitæ capitatæ*, or rather *Aggregatæ*, Linn. *Corymbiferæ*, *fect*. 5. Juff.

Gen. Ch. *Common Calyx* of one leaf, in five deep, linear, fpreading fegments, permanent. *Cor.* compound, difcoid. Florets all uniform, tubular, funnel-fhaped; their limbs fomewhat bell-fhaped, five-cleft, obtufe; the central ones male, leaft numerous; thofe of the circumference more abundant, each furnifhed with ftamens and piftil, but not all fertile. *Stam.* Filaments five, very fhort; anthers oblong, united, fhorter than the limb of the floret. *Pift.* Germen oblong; ftyle thread-fhaped, longer than the corolla; ftigma club-fhaped, notched. *Peric.* none, except the hardened fcales of the receptacle. *Seeds* folitary; oblong, deftitute of crown or wing, each enclofed in a greatly enlarged, hardened, concave, fpinous-pointed fcale of the lower part of the cylindrical chaffy *receptacle*.

Eff. Ch. Receptacle chaffy. Seed-down none. Calyx in five deep fegments. Florets uniform, tubular. Seeds feparately enclofed in the fpinous fcales of the receptacle.

1. A. *tribuloides*. Caltrop Acicarpha. Juff. as above, 348. t. 58. f. 1. Willd. n. 1.—Leaves oblong, deeply toothed.—Gathered by Commerfon, on the fea-fhore at Monte Video. *Root* tapering, annual. *Stems* one or more, herbaceous, afcending or decumbent, a fpan long, fomewhat branched, leafy, fmooth. *Leaves* alternate, feffile, oblong, obtufe, flefhy, fmooth, an inch and a half to three inches long, deeply and coarfely toothed; tapering at the bafe. *Flower-ftalks* terminal and lateral, oppofite to the leaves, and about as long, fimple, fingle-flowered, erect. *Flowers* white, hemifpherical, one-third of an inch in diameter. *Fruit* a globular head, armed with unequal, rigid, fharp, pale, divaricated, or recurved fpines, and crowned with

with a tuft of withered male florets, like a taffel. The intermediate *florets* feem to be abortive, though furnifhed with the moft confpicuous *piftils*.

2. A. *fpathulata*. Spatulate Acicarpha. Brown Tr. of Linn. Soc. v. 12. 129.—Leaves fpatulate, moftly entire.—Sent from Brazil by Mr. Sellow. A fmooth, diffufe, apparently annual plant, with angular afcending *branches*. *Leaves* fcattered, ftalked, without *ftipulas*, fpatulate, with a very fhort little point, rather thick, and perhaps glaucous, an inch and a half long; the lower ones fometimes toothed from above the middle. *Footftalks* linear, a little dilated at the bafe; the lowermoft longeft. *Heads* of *flowers* yellow, folitary; either ftalked and oppofite to the leaves, or terminal and nearly feffile. *Involucrum* of five leaves in a fimple row, longer than the flowers. *Receptacle* conical, flender, chaffy, with lanceolate pointed fcales. *Florets* tubular, uniform, fmooth. Thofe of the circumference in two or three rows, with perfect *ftamens* as well as *piftils*. Tube of the *corolla* flender, cylindrical, clofely united to the *germen* and bafe of the *ftyle*; limb funnel-fhaped, five-cleft, fegments parallel at the edges, half-lanceolate, flat, three-ribbed. *Stamens* five, inferted into the corolla, alternate with its fegments, their *filaments*, as well as the lower half of the anthers, united into a tube. *Germens* combined, each crowned with a five-cleft partial *calyx*, whofe teeth, alternate with the fegments of the *corolla*, become fpinous, each germen containing one pendulous *feed*. *Style* thread-fhaped, fmooth. *Stigma* fimple, obtufe, rather hairy. The numerous upper *florets* are rather fmaller, with a membranous *calyx*, and imperfect *germens*. The ripe *fruit*, originating from the florets of the circumference, confifts of clofe *pericarps*, combined together, not burfting, each crowned with its own enlarged fpinous *calyx*. *Seed* ovate, pendulous. *Albumen* flefhy, large, white. *Embryo* nearly cylindrical, central, about the length of the albumen, with two linear *cotyledons*. By this account it appears that Mr. Brown differs from M. de Juffieu, in thinking the prefent genus belongs to the Linnæan order of *Aggregatæ*, and not to the *Compofitæ*. This laft account of the *fruit* is evidently more natural than the above, and the character, if Mr. Brown, which we doubt not, be correct, muft be altered to "*Seeds* crowned with the fpinous partial calyx."

ACID, Acidification, in *Chemiftry*. When thefe articles were written for the Cyclopædia, the theory of Lavoifier, that oxygen was the only principle of acidification, was almoft univerfally received. Since that period, however, a great revolution has taken place in chemiftry, and the doctrine in queftion is now no longer admitted. This indeed has been noticed in fubfequent parts of this work, more efpecially under Oxygen and Oxymuriatic *Acid*; fo that little more is neceffary than to refer our readers to thefe articles. It may not be deemed fuperfluous, however, to mention here very briefly the difcoveries that have led to thefe important changes.

The firft circumftance which gave the death-blow to the doctrine of Lavoifier, was the demonftration by Gay Luffac and Thenard, and more efpecially by Davy, that oxymuriatic acid, or *chlorine*, as it is now termed, contains no oxygen, but is a fimple elementary fubftance. Chemifts indeed had never been able to demonftrate fatisfactorily that oxygen actually exifted in this fubftance; but mifled by the plaufibility of the Lavoifierian doctrines, had tacitly admitted its prefence from analogy: and fo ftrongly was this belief founded, that there are a few, we believe, who adhere to the old opinions even to the prefent time.

More recently, however, the old opinions have been rendered ftill further improbable, and the new ones corroborated by the difcovery of *iodine* and *cyanogen*; the one an elementary, the other a compound fubftance, both which have been unequivocally demonftrated to form acids by combining with hydrogen. The analogy, alfo, of fulphuretted and telluretted hydrogen, compounds free from oxygen, but poffeffing the properties of acids, have been likewife urged in proof of the new opinions, and as quite irreconcileable with thofe of Lavoifier.

Our readers will find further information on this fubject in the articles Chlorine, Cyanogen, Iodine, Muriatic *Acid*, Oxygen, and Oxymuriatic *Acid*.

ACINACIFORME, Folium, in *Botany*, a Scimitar-fhaped Leaf, is fcarcely ufed but for one fpecies of *Mefem bryanthemum*, which bears this fpecific name. (See Leaf. It is of a fucculent texture, compreffed, one edge conve and thin, the other ftraighter and thick.

Acinaciforme, *Pericarpium*, a Seed-veffel of a fimilar fhape, is exemplified in the cells of the capfule of the fame genus of *Mefembryanthemum*; fee Linn. Phil. Bot. 224.

ACINUS, in *Botany and Vegetable Phyfiology*, a Grain, is technically ufed for each pulpy portion, containing a folitary feed, of a compound Berry. (See Bacca.) The fruit of the Rafpberry, Bramble, &c., confifts of feveral *acini*; and perhaps the fame term may be applied to the feparate portions of a Mulberry, though originating in the calyx of each flower become pulpy. In *Paffiflora* the *capfule* is lined with very juicy *acini*, each lodging a fingle feed. Gærtner improperly extends the above term to the fimple many-feeded berries of the Vine, Goofeberry, &c. The laft-mentioned fruit, in an early ftate, rather refembles the *Paffiflora*.

ACONITUM, in *Botany*, (fee our former article,) has received confiderable elucidation from profeffor De Candolle, in his *Regni Vegetabilis Syftema Naturale*, v. 1. 364, where this genus is treated of as one of the natural order of Ranunculaceæ. (See that article.) Its generic references are, Linn. Gen. 274. Schreb. 368. Willd. Sp. Pl. v. 2. 1232. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 321. Sm. Prodr. Fl. Græc. Sibth. v. 1. 372. Purfh 372. Juff. 234. Tourn. t. 239, 240. Lamarck Illuftr. t. 482. Gærtn. t. 65. "Koelle Monogr. 1788. Erlang. in 8vo."—Clafs and order, *Polyandria Pentagynia*. Nat. Ord. *Multifiliquæ*, Linn. *Ranunculaceæ*, Juff. De Cand.

Eff. Ch. Calyx none. Petals five; the uppermoft vaulted. Nectaries two, ftalked, recurved. Capfules three or five.

M. De Candolle, following Juffieu's view of the fubject, gives the following characters, ufing the term *fepala* for *calyx-leaves*, and *petala* for *nectaries*.

Calyx of five petal-like, deciduous leaves; the upper one (hood) large, concave, helmet-fhaped; two lateral ones, (wings,) orbicular; two lowermoft oblong. Petals five, fometimes irregular in number; three very minute, claw-fhaped, often converted into ftamens; two uppermoft with long claws, hooded, fheltered under the helmet-fhaped leaf of the calyx, dilated at the top into a bag, whofe bottom, the fummit, or fpur, of the petal, is callous, incurved, its mouth extended into an oblong, emarginate limb, or lip. Stamens indefinite. Capfules three to five, with an indefinite number of feeds.

Perennial herbs, with tuberous *roots*, whofe knobs in fome inftances bear fibres, in others are oblong, and mixed therewith. *Stem* leafy. *Leaves* ftalked, deeply palmate, with from three to five fegments, varioufly cut, cloven and toothed. *Clufters* terminal. *Stalks* fingle-flowered, from the bofoms of the *bracteas*, each bearing two fmaller *bracteas*.

Flowers

Flowers large, irregular, fometimes fulphur-coloured, fometimes blue, or white.

All the fpecies are poifonous; the *Anthoræ* lefs dangerous; the *Napelli* highly noxious. The root is always the moft poifonous part, the herbage lefs acrid, and though in a frefh ftate injurious to animals, by drying, or by boiling in water, it becomes fo mild, that fome fpecies, *A. feptentrionale* for inftance, are eatable! Dr. Storck, who found Aconite fo ufeful in chronic rheumatifm, confirmed gout, and venereal fwellings of long duration, employed *A. paniculatum;* but other phyficians have often, without fufficient attention, promifcuoufly given every kind with blue flowers.

The twenty-eight fpecies at this time known inhabit rough bufhy or woody places, in the northern hemifphere; eleven are found in Europe, eleven in Siberia, one in Japan, one in North America, and one is common to Siberia and the weftern part of North America.

This is a moft natural genus, but very difficult as to the determination of its fpecies, nor has it been properly inveftigated. Clufius in his time was extremely well acquainted with the European kinds, and requires to be confulted in preference to all other writers.

Aconitum may be diftributed by the habit, rather than by any characters, into five fections, or divifions, as follows.

Sect. 1. *Anthora.* Flowers pale yellow. Hood convex. Leaves in numerous deep linear fegments. Species 1 and 2.

2. *Lycoctonum.* Flowers pale yellow, or very rarely blue. Hood conical, elongated, fcarcely pointed in front. Leaves in wedge-fhaped lobes. Species 3—10.

3. *Napellus.* Flowers blue or white. Hood convex. Leaves in numerous deep linear fegments. Species 11—14.

4. *Cammarum.* Flowers blue or white. Hood conical, or very convex, with a long point in front. Leaves with wedge-fhaped lobes. Species 15—20.

5. *Anabates.* Flowers blue or white. Hood convex. Stem climbing, fomewhat twining. Species 21—25.

† Such as are not fufficiently defcribed; 26—28.

†† Such as are doubtful, or uncertain; 29—35.

Sect. 1. *Anthora.*

To the above characters are added—Hood acute at the apex. Root with two oblong knobs.

1. A. *Anthora.* Wholefome Wolf's-bane. (No. 5 of our former article.) Linn. Sp. Pl. 751. Willd. n. 5. Ait. n. 4. Jacq. Auftr. t. 382. (Anthora Matth. Valgr. v. 2. 441. Camer. Epit. 837. Rivin. Pentap. Irr. t. 128. A. vulgaris. Cluf. Hift. v. 2. 98. A. five Aconitum falutiferum; Ger. Em. 969. A. vera, flóre luteo; Barrel. Ic. t. 609.)

β. atrovirens; leaves and ftalks fmooth. (A. falutiferum elatius pyrenaicum, foliis atro-virentibus, flore majore; Tourn. Inft. 425.

γ. confertiforum; clufter cylindrical, denfe, downy. (A. tuberofum; Patrin, unpublifhed.)

Hood convex, terminating in a point; fpurs fpiral; lips inverfely heart-fhaped. Leaves in numerous linear fegments. —Native of rough bufhy places, on the mountains of Europe; in Switzerland, on the Apennines, and in Siberia; *β* on the Pyrenees; *γ* on mount Caucafus.

Var. *α* has either a fimple or branched *ftem*, which, like the *flower-ftalks*, is either fmooth, or finely downy. *β* has fmooth dark-green *leaves*, a taller and fmooth *ftem*, lefs convex *hood*, with a more abrupt and pointed *beak*. *γ* is fmaller, with a clofer more cylindrical *clufter*, whofe main ftalk, as well as the partial ones, are clothed with velvet-like down; it may be a diftinct fpecies. *De Candolle.*

We have not followed, here or elfewhere, our learned friend, in his elaborate affemblage of fynonyms, nor in his chronological arrangement of them. To the latter we have objections, and the former would only be burthenfome to our plan. We wifh to give our readers an idea of his powers of difcrimination, and to profit by them ourfelves.

2. A. *anthoroideum.* Prominent Wholefome Wolf's-bane. (A. pyrenaicum; Pallas Itin. v. 2. 316, by his herbarium.) —Hood convex; its back protruding forward, over the pointed beak; fpurs fpiral; lips inverfely heart-fhaped. Leaves in numerous linear fegments.—Gathered by Pallas in Siberia. This is fo like *A. Anthora,* that perhaps it may be efteemed a mere variety. It differs only in this refpect, that the back, or ridge, of the *hood* is not merely convex, but ftretched forward over the point in front. This plant varies like the former as to the denfity of its *clufter*, and the fmoothnefs or fine downinefs of the *flower-ftalks*. *De Candolle.* We moft readily concur in the opinion of its being a variety of the firft fpecies.

Sect. 2. *Lycoctonum.*

Flowers pale yellow, whitifh, or blueifh: their hood conical, elongated, obtufe, fcarcely pointed in front. Root tuberous, fending out fibres. Leaves with fomewhat wedge-fhaped lobes, deeply toothed, or jagged, at the extremity.

3. A. *barbatum.* Bearded Wolf's-bane. Patrin, unpublifhed. "Perf. Enchir. v. 2. 83. Poiret Suppl. to Lamarck Dict. v. 1. 114."—Hood conical, obtufe; fpurs ftraight; lips obovate; wings bearded with a fringe. Bracteas minute. Stem downy. Leaves in five deep divifions, with linear pointed lobes.—Native of the eaftern part of Siberia, about Irkoulfk. *Patrin.* Intermediate between *Anthora* and *Lycoctonum*, differing from the former in having a conical *hood*, from the latter in the linear lobes of its *leaves;* from both in the ftraight *fpurs*, or fummits of the *nectaries*, (De Candolle's *petals*). *Stem* round, finely downy, not hifpid. *Leaves* with long fcattered hairs on the *footftalks*, and here and there on the under fide; the upper appearing downy when magnified; their outline circular, divided nearly to the bafe into five fomewhat cohering lobes, pinnatifid, with linear pointed fegments. *Clufter* erect, long and denfe. *Stalks* erect, downy, fhorter than the flowers, having under each a linear-awlfhaped, fcarcely downy, *bractea*, ftill fhorter; as well as a fmaller clofe *bractea* half way up. *Flowers* whitifh, according to Patrin; pale yellow when dry; externally downy; hood elongated; wings orbicular, with long hairs on their margin and inner furface. *Germens* downy.

4. A. *hifpidum.* Rough-ftalked Wolf's-bane. De Cand. n. 4.—Hood conical, obtufe; fpurs ftraight; lips obovate; wings flightly bearded. Bracteas awl-fhaped, hairy. Stem hairy. Leaves in five deep divifions, with linear, rather acute, lobes.—Found by Pallas, in the eaftern part of Siberia. *Lambert.* Differs from the laft in its hifpid, not downy, *ftem;* more deeply five-cleft *leaves*, whofe lobes are not pointed, but rather obtufe, with a little callous apex; more hairy *bracteas;* and fcarcely bearded *wings.* The *leaves* are very like *Anthora*, but with broader lobes; *flowers* like *Lycoctonum*, but with ftraight *fpurs*. *Stem* erect, round, fimple; hifpid chiefly at the bafe, with foft, rather deflexed, hairs; the top almoft fmooth. Lower *leaves* on long hairy *ftalks*, their outline orbicular; upper fide fcarcely downy; ribs of the under one hairy. *Clufter* fimple, rarely with one fmall branch, cylindrical, erect. *Stalks* erect, fhorter than the *flowers*, which are pale yellow, refembling the laft, but lefs bearded. *Bracteas* awl-fhaped, fhaggy, two lines long; two fmaller ones in the middle of each ftalk. *De Candolle.*

5. A. *fquarrofum.* Spreading-lobed Wolf's-bane. Linn. MSS. in Herb. propr. De Cand. n. 5. (A. n. 2; Linn. Hort. Upf. 152, excluding the fynonyms. A. pyrenaicum; Linn. Sp. Pl. 751, excluding the fynonyms, and the Pyrenees

as

as its place of growth.)—Hood conical, obtufe; fpurs fpiral; lips inverfely heart-fhaped. Clufter drooping at the fummit before expanfion. Leaves in five deep divifions; lobes pinnatifid, with fpreading, recurved, acute fegments.—Native of Siberia and Tartary; cultivated in the Upfal garden. Very nearly allied to *Lycoctonum*, but differing in the *leaves* being divided to the very bafe into many pinnatifid portions, whofe elongated, acute, widely fpreading fegments are entire, not at all cut or ferrated. *Clufter* long, its upper part drooping while the flowers remain in bud. *Bracteas*, both general and partial, very fmall. *Stalks* fhorter than the flowers, but much longer than their refpective *bracteas*. The reft as in *Lycoctonum*. *De Cand.* To this original fpecimen is attached a different one from Siberia, which we concur with profeffor De Candolle in thinking no other than *Lycoctonum*. Hence Linnæus is no authority for *A. pyrenaicum*, which depends upon other authors, as follows. His herbarium indeed contains, if we miftake not, a fpecimen of this fpecies, brought by baron Alftroemer from Spain, but confounded by Linnæus with *Lycoctonum*.

6. A. *pyrenaicum*. Pyrenean Wolf's-bane. Lamarck Dict. v. 1. 33. Desfont. Tabl. 149. "De Cand. Franc. ed. 3. v. 4. 916. v. 5. 642." (A. pyrenaicum, ampliore folio tenuiùs laciniato; Tourn. Inft. 424. A. n. 6; Camer. Epit. 831, with a figure.)—Hood conical, obtufe; fpurs fpiral; lips obovate. Leaves palmate below the middle, with from feven to nine three-cleft, deeply cut lobes, lying over each other.—Native of rugged meadows on the Pyrenees, among lofty thickets, flowering in July and Auguft. Tournefort and De Candolle. Related to *Lycoctonum*, but certainly diftinct. A handfome plant, three or four feet high, downy, with large, long-ftalked, almoft circular *leaves*, whofe main lobes are unequally divided, wedge-fhaped at the bafe, feparated upwards into acute, cut lobes, dilated fo as frequently to overlap each other. *Clufter* long, cylindrical, denfe, more or lefs branched at the bafe. *Stalks* often fhorter than the flowers. *Lower bracteas* in three or five lobes; *upper* linear, in the middle of each ftalk, fpreading, from two to five lines long. *Flowers* pale yellow, externally covered with velvet-like down. *Germens* hairy. Thefe characters are not very ftrong, but they are conftant. Specimens gathered by De Candolle in the Pyrenees differed in no refpect from thofe which have been cultivated at Paris, ever fince the time of Tournefort. *De Candolle.* We have had no opportunity of enquiring what ftands for this fpecies in the gardens of England, but Miller is moft likely to have received the true plant from France. Our Linnæan Spanifh fpecimen, mentioned under the laft, correctly anfwers, in every point, to the above defcription.

7. A. *lycoctonum*. Great Yellow Wolf's-bane. Linn. Sp. Pl. 750. Willd. n. 1. Ait. n. 1. Jacq. Auftr. t. 380. Bulliard Fr. t. 63. Villars Dauph. v. 3. 703, from the author. (A. lycoctonum vulgare, luteo flore; Cluf. Hift. v. 2. 94. A. luteum ponticum; Lob. Ic. 677. Ger. Em. 970. A. reticulata radice, flore fulphureo-albicante; Barrel. Ic. t. 599, 600. A. n. 2; Camer. Epit. 827. Matth. Valgr. v. 2. 431. Napellus flore luteo; Rivin. Pentap. Irr. t. 129.)—Hood conical, obtufe; fpurs fpiral; lips obovate. Leaves downy, divided more than half way, into from three to five lobes, which are three-cleft and jagged. Partial bracteas in the middle of each flower-ftalk.—Native of woods, thickets, and graffy paftures, on the mountains of Switzerland, France, Germany, and Italy, flowering in fummer. This is probably, as M. De Candolle indicates, the real ακονιτον λυκοκτονον of Diofcorides, with whofe imperfect account it fufficiently agrees. It is one of the moft common of this genus, but not found in Britain. The *ftem* is from two to four feet high, nearly fimple, or very much branched, fmooth or downy. Lobes of the *leaves* more or lefs deep, either clofe or fpreading. *Flowers* crowded or diftant. M. De Candolle hints that fome of thefe diverfities may afford fpecific diftinctions, but we can fcarcely fuppofe this. He obferves that *A. lycoctonum* differs from *barbatum*, *hifpidum*, and *ochroleucum* in its fpiral fpurs; from *pyrenaicum* in having from three to five, not feven to nine lobes in the *leaves*, and thofe not lying over each other, as well as in the *germens* being fmooth, fcarcely at all downy or hairy, and the *ftalks* moftly longer than their flowers. From the following one, hitherto confounded herewith, it differs in having pale-yellow, not blue, *flowers*, and the partial *bracteas* fituated half way up the flower-ftalks, not near their bafe.

8. A. *feptentrionale*. Blue Northern Wolf's-bane. "Koelle Acon. 22." Willd. n. 7. De Cand. n. 8. Ait. n. 6. (A. lycoctonum; Linn. Fl. Lapp. ed. 2. 185. Tour in Lapland, v. 1. 36. 47. 278. v. 2. 123. 277. Fl. Dan. t. 123. Calceolus Lapponicus; Schæff. Lapp. 360.)—Hood conical, obtufe; fpurs fpiral; lips obovate. Leaves downy, divided more than half way, into from three to five divaricated fharply cut lobes. Partial bracteas at the lower part of each flower-ftalk.—Native of mountainous thickets and paftures on the fides of the Lapland alps, and throughout Norway, as well as in fome parts of Siberia, and on the Carpathian mountains. Linnæus noticed it alfo about the bafes of the larger hills in Medelpad and Angermanland; but though he has recorded in Fl. Lapp. that the *flowers* are of a greyifh-blue; not yellow, as defcribed in all the accounts of *A. lycoctonum*; yet he ftill fuppofed his to be the fame fpecies. His own fpecimen retains evident traces of this blue or grey colour, and anfwers to the diftinctive characters of the *feptentrionale*, as given by De Candolle. The *leaves*, as that excellent writer remarks, are more acutely toothed. With refpect to the fituation of the partial *bracteas*, they are rather on the lower part, than at the bafe, of the *flower-ftalks*. The *flowers* are lefs downy, and of a thinner texture, than in *lycoctonum*. Perhaps if living fpecimens were compared, better characters might be difcovered, for there is every reafon to prefume this a diftinct fpecies. Linnæus in Fl. Lapp. fpeaks of the leaves being boiled and eaten with impunity; and in his Lapland Tour, v. 2. 123, records another inftance of the fame fact. He was juftly aftonifhed, knowing the poifonous quality attributed by all writers to *A. lycoctonum*. Perhaps this may ftrengthen our opinion of thefe plants being truly diftinct, for we find no record of the true *lycoctonum* being ufed as food, in any ftate. Haller was one of the firft botanifts who fuggefted the propriety of feparating thefe fpecies; fee his Hift. Stirp. Helvet. n. 1200. Yet there feems little reafon for his wonder, there expreffed, that this *Aconitum* fhould be fatal to wolves. When recent its qualities are probably very different.

9. A. *ochroleucum*. Pale Wolf's-bane. Willd. n. 4. De Cand. n. 9. Ait. n. 3. Marfch. Taurico-Caucaf. v. 2. 14, excluding the fynonym of Tournefort.—Hood conical, elongated; fpurs curved; lips lanceolate. Leaves deeply palmate, five-lobed, fcarcely downy beneath; lobes deeply three-cleft, acutely jagged and toothed.—Found in mountainous meadows of mount Caucafus; frequent about the mineral fprings of Narzana; flowering in fummer. Communicated to us by Dr. Fifcher. The habit entirely refembles *A. lycoctonum*, but the furface of the herb is nearly fmooth; the lobes of the *leaves* are more fharply toothed; and the *fpurs* of the *nectaries* are rather curved than fpiral. *Stem* erect, round, pale green, three or four feet high, with ftraight branches. *Clufter* long, branched at the bottom.

Lower bracteas in three or five segments, often reflexed; *upper* linear; *partial ones* in the middle of each *flower-stalk*, two lines long. *Flowers* pale buff, crowded, remarkable for their long and slender *hood*, measuring above an inch. *Stalks* shorter than the flowers. *Spurs* of the *nectaries* curiously involute.

10. A. *japonicum*. Japan Wolf's-bane. Thunb. Jap. 231. Willd. n. 2. De Cand. n. 10. (Soo Huso of the Japanese.)—Hood conical, obtuse. Leaves palmate, three-lobed; lobes obtuse, cut; their segments rounded, with a point.—Gathered in Japan by Thunberg, who describes this species as allied to *lycoctonum*. The *stem* is round and smooth. *Leaves* stalked; their lateral lobes in two segments; middle one in three; all obtuse, deeply toothed; their teeth rounded, with a point. *Cluster* short. *Thunberg*.

Sect. 3. *Napellus*.

Flowers blue or white, never buff-coloured; their hood convex, tapering into a point in front. Stem straight. Cluster cylindrical. Roots fibrous, from a rather tuberous stock. Leaves lobed in a palmate manner, many-cleft; their segments linear.

All the species of this section having been confounded under *A. Napellus*, De Candolle has thought right to lay aside that specific name entirely. But even he is doubtful whether they are not all one species!

11. A. *vulgare*. Common Monk's-hood. De Cand. n. 11. (A. Napellus; Linn. Sp. Pl. 751. "Koelle Acon. 14, with a figure." Woodv. Med. Bot. t. 6. Sm. Prodr. Fl. Græc. Sibth. v. 1. 372. A. lycoctonum 6, Napellus vulgaris; Cluf. Hist. v. 2. 96. Napellus; Matth. Valgr. v. 2. 440. N. verus cæruleus; Ger. Em. 972. N. flore minore; Rivin. Pentap. Irr. t. 130.)—Germens three, smooth. Wings hairy on the inside. Cluster cylindrical, elongated. Leaves in five divisions to the very base, with many linear acute segments, each with a longitudinal furrow on the upper side.—Native of mountainous meadows in most parts of Europe, from Switzerland, Germany, France, Spain, and Italy, to Greece, flowering in summer, and one of our most common garden plants ever since the days of Gerarde. Dr. Leèch sent us specimens from Scotland; but there is reason to doubt the plant's being really wild in Britain. De Candolle distinguishes this from all its relations, though, as he says, with difficulty, by the simple, straight, upright *stem*, almost always terminating in a simple cylindrical close *cluster*, and not corymbose; *leaves* with linear segments, that are hardly at all dilated at the extremity, marked with a furrow, and not resembling any others, except perhaps those of *A. tauricum*, whose *cluster* is the only one more dense than the present; *hood* convex, rather acute at the summit, but not gibbous or elevated at the back, as in *intermedium*, *rostratum*, and *variegatum*; *wings* hairy on the inside, which in *tauricum*, *paniculatum*, &c. are smooth; *germens* smooth, never more than three, not five, and hairy; *capsules* six lines long, and not an inch, as in *A. neubergense*. The present species however, being very common, is extremely variable; the whole surface is sometimes quite smooth, sometimes downy, especially about the *flowers*; the furrow on the segments of the *leaves* is more or less distinct; the *flowers* naturally blue, or (in the variety called by Schultz *bicolor*) white at the base, blue at the summit, become in gardens white, rose-coloured, purple, or variegated. *De Candolle*. Their most usual and well-known colour is a deep and gloomy blue; we have seen no other. Dr. Sibthorp's Greek plant must rest on his own authority, being only mentioned in his MSS., without any accompanying specimen; nor were the species of this genus so accurately noted in his time.

12. A. *strictum*. Straight Monk's-hood. "Bernh. Monogr." De Cand. n. 12.—Germens three, smooth. Wings hairy on the inside. Cluster cylindrical, elongated. Leaves in five divisions to the very base; their lobes wedge-shaped, jagged at the summit.—Native country unknown. Closely related to the last, but differing in the three or five divisions of the *leaves* being wedge-shaped in their lower part, and cut at the extremity into oblong lobes, which are shorter, blunter, and twice as broad as in that; the *cluster* is shorter, with little short branches at its base. Perhaps this may not be sufficiently distinct from the following. *De Candolle*.

13. *A. neubergense*. Broad-leaved Monk's-hood. De Cand. n. 13. (A. Napellus; Herb. Linn. Jacq. Austr. t. 382. Ehrh. Pl. Off. n. 87. "Palmstr. Suec. t. 46." A. lycoctonum, vel neubergense; Cluf. Hist. v. 2. 96. Moris. sect. 12. t. 3. f. 11. A. purpureum neubergense; Ger. Em. 973. A. foliorum laciniis linearibus, supernè latioribus, lineâ exaratis; Linn. Hort. Cliff. 214. Moræus in Stockh. Trans. for 1739. 43. t. 2. Napellus flore majore; Rivin. Pentap. Irr. t. 131.)—Germens three, smooth. Wings hairy on the inside. Cluster cylindrical, elongated, lax; stalks downy, rather spreading. Leaves in five deep, wedge-shaped, three-lobed, jagged segments.—Native of alpine meadows in various parts of Germany, Hungary, Siberia, &c., flowering rather later than *A. vulgare*, and no less common in gardens than that species, with which it is generally confounded. Clusius having originally met with this plant in the greatest abundance on the mountain called Neuberg, in Styria, De Candolle has chosen the above specific name, which is indeed preferable to the mongrel one of *neomontanum*, adopted by some writers. The species before us is said to differ from *vulgare*, in having broader *leaves*, whose rather wedge-shaped divisions are more connected at the base; three-cleft and cut at the extremity, into acute segments, thrice the breadth of *vulgare*, and not marked with any furrow. The *cluster* also is more lax, its stalks always downy, more spreading, and longer than the *flowers*. The *capsules*, according to Wahlenberg, are three, above an inch long, spreading, those in the middle part of the cluster exceeding the length of their stalks.

14. A. *tauricum*. Taurian Monk's-hood. Wulf. in Jacq. Coll. v. 2. 112. Jacq. Ic. Rar. t. 492. De Cand n. 14. "Koelle Acon. 15." (A. Napellus; Bull. Fr. t. 45? *De Cand.* A. lycoctonum quartum tauricum; Cluf. Hist. v. 2. 95. A. violaceum; Ger. Em. 973.)—Germens three, smooth. Wings smooth. Cluster cylindrical, elongated, very dense; stalks smooth, shorter than the bracteas. Leaves in five divisions to the very base, somewhat pedate, with linear lobes.—Native of the alpine heights of Tauria, Carinthia, &c. flowering in summer. Very like *vulgare*, but the smooth *wings* and *flower-stalks*, the latter shorter than their *bracteas*; the short dense *cluster*, whose main stalk is concealed; and the pedate, more wedge-shaped, linear-lobed, scarcely furrowed *leaves*, are thought by De Candolle to afford sufficient differences.

Sect. 4. *Cammarum*.

Flowers blue or white; hood very convex, or conical, ending, often abruptly, in a point in front. Cluster lax, somewhat corymbose. Stem straight. Leaves deeply divided, in a palmate manner, into wedge-shaped lobes. Roots navew-shaped, intermixed with small fibres.

For the same reason as concerns the last section, the specific name *Cammarum* is here laid aside, having been variously applied by different botanists. De Candolle suspects all the species of the present section, or at least the first four, may be varieties of each other!

15. A. *intermedium.* Ambiguous Monk's-hood. De Cand. n. 15. (A. neomontanum; Willd. n. 9, excluding the synonyms. "Hoppe Pl. Exsicc." *De Cand.* Thora italica, seu Napellus minor, flore cæruleo; Barrel. Ic. t. 610.)—Germens three, smooth. Wings internally hairy. Cluster lax, corymbose; stalks smooth. Hood very convex, somewhat conical.—Found in mountainous woody parts of Germany and Flanders, flowering in July. In habit like the two following, but the hairy *wings*, (De Candolle by mistake says *lips*,) distinguish this species from all the rest of the section. We have seen no specimen.

16. A. *paniculatum.* Panicled Monk's-hood. Lamarck Franc. ed. 1. v. 3. 646. n. 1224. Dict. v. 1. 33. De Cand. n. 16. (A. Napello simile, sed minus, cæruleum, præcocius; Bauh. Hist. v. 3. 656. Chabr. Sciagr. 531. Napellus; Camer. Epit. 836. Storck Libell. 69. t. 3.)

β, cluster drooping. De Cand. (A. cernuum; "Koelle Acon. 17." Willd. n. 12. A. lycoctonum octavum, comâ nutante; Clus. Hist. v. 2. 97. A. maximum nutante comâ; Ger. Em. 971. A. septimum; Matth. Valgr. v. 2. 436. Camer. Epit. 832.

Germens three, smooth. Wings internally smooth. Cluster lax, corymbose; stalks downy. Hood convex.—Found in various alpine parts of Europe, flowering towards autumn. The *roots* are roundish, tapering downwards, bearing many long fibres. *Stem* erect, smooth. *Leaves* somewhat pedate; their lobes wedge-shaped below, acutely pinnatifid upwards. *Cluster* usually erect, with long downy *stalks;* downy; the lower ones branched. *Flowers* large, of a brighter blue than *vulgare*, with a convex *hood*, whose point is more remarkable than in the 3d section. It may be important, if any person should repeat Storck's experiments, to be aware that this is the plant he used, and not our Common Monk's-hood, *A. vulgare.*

17. A. *rostratum.* Beaked Monk's-hood. De Cand. n. 17. (A. *Cammarum;* Lamarck Dict. v. 1. 33. Willd. n. 14? A. lycoctonum nonum judenbergense; Clus. Hist. v. 2. 97. A. maximum judenbergense; Ger. Em. 973. A. lycoctonum, flore maximo; Bauh. Hist. v. 3. 659.)—Germens three, smooth, or only fringed at the inner edge. Wings smooth. Cluster somewhat corymbose, of few flowers, with smooth stalks. Hood conical, elevated, abrupt in front, with a prominent beak.—Native of the Austrian and Swiss alps, flowering in summer. We have it in Mr. Davall's herbarium, but the plant seems unknown to cultivators. The *roots* are roundish, tapering downward. *Stem* a yard high, straight, round, smooth, purplish. *Leaves* somewhat pedate, with wedge-shaped, jagged, acute lobes. This species differs from the preceding, as well as from the following, in the very large and high *hood*, accompanied by a very considerable *beak*, being conspicuous for the greater size, and rather paler blue, of its flowers.

18. A. *hebegynum.* Downy-fruited Monk's-hood. De Cand. n. 18. (A. Cammarum; Linn. Sp. Pl. 751? Willd. n. 14? Ait. n. 11? Jacq. Austr. t. 424.)—Germens from three to five, all over finely downy. Wings nearly smooth. Cluster rather corymbose, of few flowers; stalks downy. Hood convex, beaked in front.—Native of rugged bushy places on the alps of Switzerland, from whence we have it; as well as of Austria and the recesses of the Carpathian mountains, flowering in summer. A large handsome species, with ample *foliage*, whose segments are acutely pinnatifid. *Flowers* dark-blue; their hood rounded, much less elevated than in the preceding. The *germens* clothed with fine velvet-like down afford a clear specific character. There are no means of perfectly ascertaining the *A. Cammarum* of Linnæus, he having left no specimen, and his synonyms pointing to different plants. His character of "*floribus subpentagynis*" is all that indicates the present species, which is probably the plant of the gardens. De Candolle says all the synonyms of his first, or principal, variety of *paniculatum*, may just as well serve for *hebegynum;* but surely Storck's figure cannot be mistaken for this. The plants themselves can never be confounded, provided the *germens* be attended to; for which discovery we are indebted to professor De Candolle.

19. A. *variegatum.* Variegated Monk's-hood. Linn. Sp. Pl. 750. Willd. n. 13. Ait. n. 10. "Koelle Acon. 18." (A. lycoctonum decimum, Thora italica; Clus. Hist. v. 2. 98. A. lycoctonum cæruleum parvum; Ger. Em. 971. Napellus flore mixto; Rivin. Pentap. Irr. t. 133.)—Germens three, smooth as well as the petals. Cluster lax; stalks smooth; the lower ones many-flowered, twice the length of their many-cleft bracteas; their lower partial bracteas cut. Hood elevated, conical, obtuse, with a short beak in front.—Native of woody rather alpine situations, in Carniola, Bohemia, and Italy, flowering in August. *Root*, according to Clusius, tuberous, with ovate knobs, or rather perhaps buds. Whole *herb* smooth. *Stem* erect, with spreading branches. *Lower leaves* on long stalks, their outline orbicular, their upper side of a shining green, lower pale; their three or five deep principal divisions wedge-shaped at the base, dilated and many-cleft at the extremity, with oblong acute segments; *upper leaves* sessile; *floral* ones in three deep divisions, copiously, but not deeply, cut. *Lower stalks* of the *cluster* distant, each bearing three or four flowers. Partial *bracteas*, which are under each flower, linear. *Flowers* large, perfectly smooth, blue (or blue and white); the *hood* very large, above an inch long, and extremely convex, not at all covering the wings, its beak short; *wings* orbicular, six or seven lines long; *germens* smooth, slender. *De Candolle.* This description answers to the Linnæan specimen, and nearly to our garden plant, except that we have always seen the *flowers* principally white, with a portion of blue on the beak and wings, and that the *stem* in ours is rather of the twining or wavy kind, as in the next section; by no means straight, though supporting itself. This character appears in the old wooden cuts, and may possibly have escaped M. De Candolle, only because, as he himself mentions, he had seen no other than a dried specimen. The figure of Rivinus indeed is erect, and yet, notwithstanding the annexed representation of five *capsules*, we can scarcely doubt that synonym.

20. A. *album.* White Monk's-hood. Ait. ed. 1. v. 2. 246. ed. 2. n. 5. Willd. n. 6. De Cand. n. 20. (A. orientale; Mill. Dict. ed. 8. n. 10. A. lycoctonum orientale, flore magno albo; Tourn. Cor. 30. Napellus flore albo; Rivin. Pentap. Irr. t. 132?)—Germens four or five. Hood conical, with a long claw. Cluster lax, simple. Stalks erect. Leaves in three or five deep, ovate-wedge-shaped, three-cleft, toothed segments.—Found in the Levant by Tournefort, who sent seeds to the royal garden at Paris, and from thence, according to Miller, it came to England. Hence there can be no doubt respecting Tournefort's synonym; and yet his appellation of *lycoctonum*, and the place in his *Inst.*, where he directs this species to be inserted, might favour the application of his synonym to *ochroleucum*, n. 9, as in the Flora Taurico-Caucasica. The plant of Aiton, and consequently of De Candolle, is totally different from the *ochroleucum*, and very near *variegatum*. The *stem* is described by Miller six feet high, or more. We have a specimen from Dr. Schrader, sent to be compared with *Napellus*, which appears to be this very species, and agrees well with the figure of Rivinus indicated above, except the *flowers* being blue; but that circumstance can be

be of no moment. The *ſtem* is round and ſmooth. *Leaves* ſmooth; their wedge-like lobes ſharply pinnatifid. *Cluſter* lax, with ſome axillary branches below. *Stalks* erect, ſmooth. *Hood* near an inch and a half long, obtuſe, even, bent forward with a ſlightly recurved, notched, beak; its *claw* longer than the large round *wings*. *Germens* five, ſmooth.

Sect. 5. *Anabates.*

Flowers blue or white; hood convex. Cluſter lax. Stem twining, climbing.

21. A. *erioſtemon.* Hairy-threaded Monk's-hood. De Cand. n. 21. ("A. volubile; Koelle Acon. 21, but not of Willdenow." *De C.*)—Stem twining, ſomewhat downy with cloſe hairs. Footſtalks naked. Leaves in three or five deep, pinnatifid lobes, with lanceolate ſegments. Cluſter lax. Germens two or three, very ſmooth. Stamens hairy. —Gathered by Koelle in Siberia; cultivated at Montpellier. *Stem* round, its fine cloſe hairs ſcarcely viſible with a microſcope. *Leaves* ſmooth, with diſtant, oblong, acute ſegments. *Upper branches* flowering at their extremities. *Lower bracteas* in three or five diviſions; *upper* oblong, undivided; *partial ones* linear. *Stalks* downy. *Flowers* pale blue, hardly at all downy; *hood* gradually tapering into an acute beak, with a ſpace between it and the *wings*, which are fringed, but nearly or quite ſmooth on their inſide. *Filaments* hairy! *De Candolle.*

22. A. *ciliare.* Fringed Monk's-hood. De Cand. n. 22. (A. volubile; Willd. n. 11, but not of Koelle. Ait. n. 9. Donn Cant. ed. 5. 135.)—Stem twining, clothed with ſpreading hairs. Footſtalks fringed. Leaves in three or five deep pinnatifid lobes, with linear-lanceolate ſegments. Cluſter lax. Germens five or more.—Native of woods in Siberia. We received a ſpecimen in flower, in Sept. 1801, from the rich garden of the late Rev. Mr. Watts, of Aſhill, Norfolk. The *ſtem* is round, ſlender, purpliſh, ſix feet high, varying in its degree of downineſs. *Leaves* in ſize and figure not unlike *Malva moſchata.* *Cluſter* branched, lax. *Flowers* of a middle ſize, rather light blue, downy; *hood* convex, rounded, with a beak in front; *ſpurs* hooked, with an obtuſe, inverſely heart-ſhaped, lip. *Germens* five or ſix, elliptic-oblong, ſmooth. *Stamens* ſmooth. Our ſpecimen rather anſwers to the more hairy variety of De Candolle, which he ſuſpected might prove a diſtinct ſpecies; we have ſeen no other, and can therefore form no opinion.

23. A. *tortuoſum.* Twiſted Monk's-hood. Willd. Enum. 576. De Cand. n. 23. (A. n. 8; Matth. Valgr. v. 2. 437? A. comâ inflexâ, foliis latioribus; Tourn. Inſt. 425?)—Stem twining, ſmooth, as well as the footſtalks. Leaves in three deep, ovate, pointed, coarſely and deeply toothed lobes. Cluſter lax. Germens two or three, quite ſmooth, as well as the ſtamens.—Seen in a cultivated ſtate only, by Willdenow and De Candolle, who knew not whence it came. The *ſtem* riſes to the height of ſix or ſeven feet, branching, round, and ſmooth. *Leaves* ſmooth; their lobes wedge-ſhaped at the baſe; the lateral ones deeply cloven. *Flower-ſtalks* downy. *Lower bracteas* three-cleft; *partial ones* awl-ſhaped, placed about half way up each ſtalk. *Flowers* ſmooth, pale blue; *hood* convex, gradually tapering into an acute beak. The figure of Matthiolus expreſſes the habit, but may probably belong to ſome other ſpecies. *De Candolle.* Indeed many of that author's figures are curved, evidently to accommodate them to the dimenſions of the wooden block.

24. A. *glabrum.* Smooth Twining Monk's-hood. De Cand. n. 24.—Stem twining, ſmooth like the footſtalks. Leaves in five deep, lanceolate, wedge-ſhaped, coarſely and deeply toothed lobes. Cluſter lax. Hood ſtalked, elongated, conical, with a long, erect, cloven beak.—Native country unknown. Deſcribed from the herbarium of Profeſſor Desfontaines. The whole herb is ſmooth. The *flowers* are pale blue, and remarkable for the long linear lobes which terminate the *beak*, and ſtanding erect, are nearly on a level with the top of the *hood*, which appears to be the great peculiarity of this little-known ſpecies.

25. A. *uncinatum.* American Monk's-hood. Linn. Sp. Pl. 750. Willd. n. 15. Ait. n. 12. Purſh n. 1. Curt. Mag. t. 1119. De Cand. n. 25.—Stem ſomewhat twining, ſlightly downy. Footſtalks ſmooth. Leaves abrupt at the baſe; lobes three or five, acute, with three teeth. Cluſter lax. Hood ſtalked, elongated, convex.—In ſwamps, and by the ſides of rivulets, on the high mountains of Virginia and Carolina, flowering in June and July. *Flowers* large, of a fine blue, and ſingular ſtructure. *Purſh.* *Stem* round, ſomewhat branched, minutely downy. *Footſtalks* ſmooth, round, with a longitudinal furrow. *Leaves* coriaceous, ſmooth, dark-green, lobed only about half down; lobes three-ribbed. *Lower ſtalks* of the *cluſter* long and divided; *upper* ſimple and crowded; all downy in their upper part. *Bracteas* two, oblong, not far from the *flowers*, which are large, of a rich violet purple; *hood* tapering into a ſharp beak; wings orbicular, hairy rather than fringed. *Germens* three to five, downy. Such is our Linnæan ſpecimen, from J. Bartram.

M. De Candolle ſaw in the herbarium of Michaux, mixed with the above, ſpecimens, whoſe *hood* was twice as long, almoſt conical, without any hook or beak. This he conſiders as the *uncinatum* of that author, Fl. Boreal.-Amer. v. 1. 315, and poſſibly a diſtinct ſpecies.

Mr. Purſh ſays,—"On the foot of the Peaks of Otter, and about the ſweet ſprings, another ſpecies occurs, with ſmaller *flowers*, and a climbing *ſtem* which ſometimes attains the height of nine feet; but unfortunately I have no materials at preſent to give a correct deſcription thereof."

Hence it appears that the hiſtory of this long-eſtabliſhed genus is not yet complete. M. De Candolle enumerates three ſpecies, of which he had not ſufficient information to define them correctly. Theſe are,

26. A. *delphinifolium*, of which there are three varieties. 1. *Americanum*, found by David Nelſon, in Sledge (not Hedge) iſland, with an erect *ſtem*, from ſix to twenty inches high, downy upwards; *leaves* like *Delphinium pentagynum*, ſmooth, in numerous pinnatifid ſegments; and blue racemoſe *flowers*, whoſe *hood* is convex, acute at the ſummit. 2. *Sibiricum*, gathered in Siberia by Pallas, has larger *flowers*, with *nectaries* but half the length of the hood. 3. *Kamtchaticum*, has from three to ſix rather ſcattered, ſomewhat ſmaller, *flowers*, and rather longer *nectaries*. *Root* of tufted fibres. *De Cand.*

27. A. *biflorum.* (A. grandiflorum; Fiſcher Hort. Gorenk. 1808. 77.)—Native of the Altai mountains. *Root* tuberous, ovate, the ſize of a pea. *Stem* four inches high, ſlender, finely downy at the ſummit. *Leaves* in five deep, palmate ſegments, with linear acute lobes; the lowermoſt on long ſtalks. *Flowers* two, terminal, nearly ſeſſile, pale blue; *hood* convex, externally downy at the back, tapering into an acute beak; *wings* obovate, or roundiſh, ſmooth. *Stamens* ſmooth. *Germens* three, villous. *Nectaries* hooked, obtuſe, with very minute lips. *De Cand.*

28. A. *maximum.* Pallas herb.—Native of Kamtchatka. *Stem* ſix feet high, erect, round, ſmooth. *Leaves* ſmooth, ſtalked, wedge-ſhaped at the baſe, in three or five dilated, wedge-ſhaped, five-cleft lobes. *Cluſter* ſhort, of eight or ten pale-blue *flowers*, on downy *ſtalks*, with a convex acute *hood*, like that of *delphinifolium*, but ſmaller. *De Cand.*

The

The feven following are fcarcely to be afcertained.

29. A. nonum; Matth. Valgr. v. 2. 438. Dalech. Hift. 1741. f. 2. A. comâ inflexâ, floribus rarioribus, et foliis eleganter diffectis; Tourn. Inft. 425.—We fhould fuppofe this an unnatural pofture of *A. Anthora*, n. 1.

30. A. lycoctonum quartum, five lynceanum; Cluf. Hift. v. 2. 96. Bauh. Hift. v. 3. 657.—No figure.

31. A. ramofum, parvo flore; Bauh. Pin. 183. Bauhin cites A. octavum, Matth. Valgr. v. 2. 437. See our n. 23.

32. A. fpicâ florum pyramidali; Morif. Præl. 226. A. pyramidale multiflorum; Tourn. Inft. 425. A. pyramidale; Mill. Dict. ed. 8. n. 6.—Efteemed by De Candolle a variety of *A. vulgare*, n. 11.

33. A. *feptimum*. Matthioli; Debry Floril. Nov. t. 42, but not the plant of Matthiolus.

34. A. minus autumnale infulæ Cheufan, finicè *Tfou-u;* Pluk. Amalth. 5.

35. Napellus major cæruleus montanus, anthoræ radice; Bocc. Muf. 74.—Native of Monte Cofcione, in Corfica.

ACOTYLEDONES, conftitute a clafs of plants in the natural fyftems of moft authors, but efpecially of Juffieu, in whofe method this clafs ftands firft. In thefe the *corculum* of the feed is defined to be deftitute of cotyledons, and confequently undivided in the procefs of germination, though forming a root below, and more or lefs of a ftem, or at leaft a frond, above. The parts of fructification in many of this tribe are obfcure, anomalous, or altogether unknown. The orders in the above-mentioned writer are fix; FUNGI, ALGÆ, HEPATICÆ, MUSCI, FILICES, and NAIADES; all which articles the reader will find in their proper places. From our account of *Mufci* and *Filices* he may obferve, that the denomination of the fuppofed natural clafs in queftion, and its effential character above-mentioned, are far from being univerfal or unexceptionable, thofe two orders having manifeft cotyledons, or fomething equivalent; while many plants, fuppofed to have a folitary cotyledon, have really none at all. See the article MONOCOTYLEDONES, where this fubject is difcuffed. See alfo COTYLEDONES and GERMINATION.

ACOUCHY. See AKOUSCHY.

ACOUROA, in *Botany*, apparently a vernacular name in Guiana, by which Aublet has chofen to defignate a papilionaceous diadelphous plant, which Juffieu, with great reafon, fufpects to be a fpecies of PTEROCARPUS (fee that article); as well as another genus, named by the fame author *Vatairea*. See Aubl. Guian. 753—756. t. 301, 302.

A. *violacea*, the only fpecies, is a tree, found about the margins of falt-water creeks in Guiana, bearing flowers and fruit in July. The *trunk* is twelve or fifteen feet high, and a foot in diameter, fending out from its fummit many fpreading branches; the bark reddifh, cracked, and wrinkled; the wood whitifh externally, but the heart is reddifh, hard and compact. *Leaves* alternate, alternately pinnate of feven or nine ovate, pointed, entire, firm, fmooth *leaflets*, gradually larger upwards, the lowermoft being an inch and a half or two inches long, the uppermoft or terminal one four or five. *Stipulas* fmall, deciduous. *Clufters* about the ends of the branches, long, compound, many-flowered. *Bracteas* fmall, folitary at the bafe of each flower. *Calyx* of one leaf, in five fharp unequal fegments. *Corolla* papilionaceous, violet-coloured. *Stamens* ten, diadelphous, the odd one diftinct. *Stigma* obtufe. *Pericarp* dry, reddifh, nearly orbicular, concave on one fide, convex on the other, not burfting. *Seed* folitary, lenticular. *Aublet*.

The *Vatairea*, Aubl. t. 302, is a much larger tree, the *trunk* being fifty feet in height, with a fmooth whitifh bark, and light brittle wood. *Leaves* pinnate, as in the former, but more elliptical. *Flowers* unknown. *Pod* flat on both fides, with a thick edge, chefnut-brown, of an irregularly orbicular fhape, about three inches in diameter, containing one large *feed;* which, when beaten in a mortar with purified pork lard, is ufed to cure tetters or ring-worms, whence the inhabitants of Guiana call this feed *Graine à dartres*. The tree grows by river fides in that country. *Aublet*.

ACQUACKNACK. Add, containing 2023 inhabitants.

ACRE, col. 3, l. 29. The tobacco of Acre is highly efteemed; and coarfe muflins, remarkable for the durability of their dye, are fold at a low rate. The inhabitants make ufe of wooden tubes for their tobacco-pipes, garnifhed with a fwathing of filk, or linen, for the purpofe of abforbing water. This being kept moift, cools the fmoke, as it rifes, by the conftant evaporation. A modern traveller, in the account of his Journey from Acre to mount Carmel, mentions the exportation to Venice of the fand of the river Belus for the glafs-houfes of that city. (See GLASS.) At Acre there are the remains of an ancient church, with pointed arches, other inftances of which, demonftrating the exiftence of the Gothic architecture, occur in the Holy Land.

ACROSTICHUM, in *Botany*, a Linnæan name, whofe meaning therefore is to be fought in the obfcure hints left by its author. He derives the word in *Phil. Bot.* 183, from ακρος, *top*, and στιχος, *an order or row*, but its application has been thought rather difficult. We agree with De Theis, that ακροστιχον literally means the beginning, or the firft letters, words, or lines, of a fet of verfes; but we cannot affent to his explanation, of its being given to thefe plants "becaufe feveral of them bear, on the back of the leaf, lines refembling the beginnings of words;" there being in fact no fuch thing, nor has Linnæus defcribed any fimilar marks. It feems natural to trace his ideas in the appearance of the moft remarkable of the original fpecies, four of which are delineated in *Amoen. Acad. v.* 1. *t.* 10, and in two or three of thefe, the *rows* of linear appendages, or *leaflets*, at the *top* of the *frond*, fufficiently explain the meaning of Linnæus. Thefe fpecies indeed are now removed from the eftablifhed genus of *Acroftichum*, which has undergone much alteration fince its firft publication, and the view of its fpecies already given, (fee ACROSTICHUM,) requires to be totally reformed. Many of them are removed to other genera, while a great number of new ones have more than fupplied their places. Willdenow, the lateft general writer on *Filices*, which make the moft original and accurate part of his *Species Plantarum*, defines fixty-two fpecies, under fix fections, of which we fhall take a general view, firft, as ufual, prefixing the generic fynonyms and characters.—Linn. Gen. 559. Schreb. 756. Willd. Sp. Pl. v. 5. 100. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 5. 500. Sm. Mem. de l'Acad. de Turin, v. 5. 147. Tracts 230. Prodr. Fl. Græc. Sibth. v. 2. 271. Swartz Syn. Fil. 9. Ind. Occ. 1587. Spreng. Crypt. Engl. ed. 84. t. 2. f. 18. Brown Prodr. Nov. Holl. v. 1. 145. Purfh 658. Juff. 15. Lamarck Dict. v. 1. 34. Illuftr. t. 865 f. 4.—Clafs and order, *Cryptogamia Filices*. Nat. Ord. *Filices dorfiferæ*; fect. *annulatæ*.

Gen. Ch. *Capfules* globular, of two equal valves, bound by a jointed elaftic ring, and difpofed in broad, continued, indeterminate, denfe maffes, more or lefs intermixed with hairs, or fine fcales, over the back of the *frond;* either entirely, or partially at the upper part of the whole, or of its fegments or leaflets, which are often contracted, or otherwife changed, in their fructifying portions. *Involucrum* entirely wanting, (unlefs the above-mentioned hairs, or fcales, be taken for fuch.)

Eff. Ch. Capfules occupying the back of the frond, in uninterrupted

uninterrupted ſhapeleſs maſſes, either partially or entirely. Involucrum none.

The whole genus, as it now ſtands, is chiefly tropical, a very few ſpecies only being found in the ſouth of Europe, and one in North America. None are arboreſcent. The ſpecies removed from the catalogue of the genus, in our former article, are the following; and are thus diſpoſed of by Willdenow, we believe, on the whole, very correctly.

A. *lanceolatum*, is Polypodium acroſtichoides, Willd. Sp. Pl. v. 5. 156.
heterophyllum, P. adnaſcens, ibid. 145.
punctatum, Linn. Sp. Pl. 1524, P. lingulatum, 159.
ſpicatum, Sm. Pl. Ic. t. 49, Lomaria ſpicata, 289.
Lingua, Polypodium Lingua, 162.
haſtatum, P. tricuſpe, 163.
ſeptentrionale, Aſplenium ſeptentrionale, 307.
auſtrale, A. auſtrale, 308.
pectinatum, Schizæa pectinata, 85.
dichotomum, S. dichotoma, 87.
digitatum, S. digitata, 86.
ferrugineum, Polypodium incanum β, 175.
polypodioides, P. incanum α, 174.
rufum, Hemionitis rufa, 129.
punctatum, Linn. Suppl. 444, altered to *punctulatum* by Swartz, Syn. 13, retains the latter name in Willd. Sp. Pl. v. 5. 118.
areolatum, Woodwardia anguſtifolia, Sm. unjuſtifiably altered to W. onocleoides, ibid. 416.
marginatum, Pteris grandifolia, 369.
ſanctum, Polypodium ſanctum, 198.
platyneuron, Aſplenium ebeneum, 329.
ſiliquoſum and *thalictroides*, reduced to one ſpecies, as Pteris thalictroides, 378; but perhaps they require further inveſtigation.
ilvenſe, Polypodium ilvenſe, 198. See Woodsia.
furcatum, Mertenſia furcata, 71; a genus reduced by Mr. Brown to Gleichenia. See that article, and Mertensia.
aculeatum, Davallia fumarioides, 480.
barbarum, Todea africana, 76, our Osmunda *barbara*.
viviparum, Darea vivipara, 302.
ſerrulatum, Grammitis ſerrulata, 141.
graminoides, G. graminoides, 141.

To which we muſt add that *A. ebeneum* is made by Willdenow the variety β of *calomelanos*, 124; and *petiolatum* is reduced to *viſcoſum*, 103. Fifteen ſpecies therefore, out of our former liſt, are all that are retained by Willdenow, and the generic name remains with plants that do not by any means anſwer to it, though they agree correctly with the generic character.

We proceed to give examples of the ſeveral ſections.

Sect. 1. *Frond ſimple, undivided.* Twenty-five ſpecies. We ſhall here venture to unite two of them, *latifolium* and *longifolium*, adding a new one, *limbellatum*.

A. *nummularifolium*. Money-wort Acroſtichum. Willd. n. 1. Swartz Syn. Fil. 419 and 191. t. 2. f. 1.—Barren fronds roundiſh, obtuſe, ſomewhat heart-ſhaped; hoary and downy beneath: fertile ones obovate. Common ſtalk thread-ſhaped, ſcaly, creeping.—Found by Thunberg in Java. The *common ſtalk* creeps extenſively, attaching itſelf by copious, tufted, black radicles, and bearing ſeveral alternate ſimple *fronds*, or *leaves*, not an inch long, on ſhort partial foot-ſtalks; theſe are ſmooth on the upper ſide, veinleſs; the hoary down of their under ſurface is interſperſed with ſtarry hairs. The fertile *fronds* are fewer and ſmaller, tapering at the baſe, ſometimes beſprinkled with ſtarry hairs; their backs covered with ſhining-brown capſules, intermixed with ſtarry hairs of a ruſty hue. *Swartz.*

A. *fimbriatum*. Fringed Acroſtichum. Willd. n. 3. "Cavan. Annal. de Nat. Scienc. v. 1. 102." Swartz Syn. Fil. 11.—Fronds lanceolate, fringed. Stalks briſtly.—Native of ſhady mountainous places in the kingdom of Quito.—We have been favoured with a ſpecimen, gathered by William Swainſon, jun. eſq. of Liverpool, on damp rocks in woods, among the mountains at Rio Janeiro, which anſwers to the above definition, but we are not authorized, without better information, to aſſert that it is Cavanille's plant. The *fronds* of ours grow eight or ten together, in tufts, with a fibrous, blackiſh, ſcarcely hairy, *root*: each being an inch and a half long, one-third of an inch wide, bluntiſh, ſhaggy on both ſides with coarſe, briſtly, reddiſh-brown hairs, ſpreading copiouſly beyond the edges. *Stalks* ſimple, equally ſhaggy, rather longer than the fronds. The fertile *fronds* are convex above, almoſt hooded; their concave under ſurface covered with brown *capſules*. The ſize and habit of this fern reſemble *Blechnum Lanceola*, of Swartz, in Stockholm Tranſ. for 1817, 71. t. 3. f. 2, a native of Braſil; but the latter is ſmooth and naked, with the proper fructification and *involucrum* of a *Blechnum*.

A. *viſcoſum*. Glutinous Acroſtichum. Willd. n. 8. Swartz Syn. Fil. 10 and 193. (A. petiolatum; Sw. Ind. Occ. 1588.)—Fronds linear-lanceolate, pointed, ſmooth on both ſides; their ribs, as well as ſtalks, ſcaly and viſcid: fertile ones linear; hairy beneath and covered with capſules to the very margin.—Found on the moſſy trunks of trees, on the higheſt mountains of Jamaica. *Root* ſlightly creeping. *Stalks* crowded, ſlender, angular, roughiſh, ruſty and ſcaly, three or four inches high. Each *frond* is a ſpan long, erect, rather rigid; the *barren* ones linear-lanceolate, pointed, ſomewhat membranous, ſmooth, beſprinkled at the back with minute, prominent, browniſh, glandular dots; their ribs ſcaly; *fertile* ones on longer ſtalks, more linear, either ſmooth or ſlightly hairy, covered entirely at the back with pale ruſty powdery *capſules*. The clammineſs of the *ſtalks*, and the haírineſs of the fertile *fronds*, diſtinguiſh this ſpecies from its allies. *Swartz.*

A. *limbellatum*. Narrow-bordered Acroſtichum. (Lingua cervina anguſtifolia, coſtis et pediculis villoſis; Plum. Fil. 113. t. 129.)—Fronds linear-lanceolate, wavy, pointed, ſmooth on both ſides; their ribs and ſtalks hairy: fertile ones nearly linear, with a ſmooth naked border.—Gathered by Plumier, on moſſy rocks about the ſource of a little rivulet, called Le Morne Rouge, near fort St. Pierre, in Martinico. The *root* is long, creeping, cylindrical, reſembling a worm, covered with little black fibres. *Fronds* numerous, erect, above a foot high, each of their fine tranſverſe veins ending in a little dot, before they reach the margin; at leaſt ſuch is their appearance in Plumier's figure. This character, the greater height of the *fronds*, and the fertile ones having a ſmooth naked border, over which the *capſules* do not extend, cauſed Dr. Swartz to omit citing Plumier's figure under the laſt-mentioned ſpecies. We have no doubt of theſe plants being very diſtinct from each other. Plumier is one of the few authors whoſe fidelity is always to be relied on, and he is therefore the ſole authority for ſeveral of Linnæus's ſpecies of ferns, deſcribed from his plates and deſcriptions.

A. *villoſum*. Shaggy Bordered Acroſtichum. Willd. n. 10. Swartz Syn. Fil. 10. Ind. Occ. 1592. (Lingua cervina villoſa minor; Plum. Fil. 110. t. 127. f. D.)—Fronds lanceolate, wavy, pointed, ſhaggy on both ſides: fertile ones ſomewhat elliptical, with a naked border; fringed at the edge. Stalks hairy, elongated.—Gathered by Plumier

mier in wet woods in Hifpaniola; by Swartz on the hollow moffy fides of hills in the fouth of Jamaica. *Root* tufted, not creeping. *Stalks* about half as long as the *fronds*, fhaggy with coarfe rufty hairs, fuch as cover both fides of the leafy part, efpecially at the edges. There is a vacant fpace, as in the laft, between the *capfules* and the margin of the leaf, well expreffed by Plumier, and mentioned by Swartz.

A. *hirtum*. Great Hairy Acroftichum. Willd. n. 11. Swartz Syn. Fil. 419 and 194.—Fronds elliptic-lanceolate, pointed, fcaly on both fides, like their ftalks; the margin dotted, and fomewhat crenate: fertile ones much narrower, covered to the edge with capfules and convoluted fcales.—Suppofed by Swartz to be a native of Madeira, but we have always believed our fine fpecimens to have been gathered by the late Mr. Smeathman, in the Weft Indies. The *root* is thick and fcaly, apparently fomewhat creeping. *Fronds* a fpan long, on fcaly *ftalks* often exceeding that length; thickly befprinkled fometimes on both fides, but efpecially on the under one, which is the paleft, with fmall, ovate or heart-fhaped, pointed, peltate, clofe-preffed fcales, of a pale fhining brown. Many of the tranfverfe *veins* terminate, near the margin, in depreffed dots. The fertile *fronds* are much fhorter and narrower, fomewhat heart-fhaped at the bafe, covered entirely at the back with fhining rufty *capfules*, intermixed with lanceolate, convoluted, tubular fcales. We have one *frond*, two-thirds of which are barren and broadly elliptical, but the upper part is fuddenly contracted into a lanceolate form, covered with *capfules* and fcales. The main rib is always very fcaly beneath.

A. *undulatum*. Wavy Hairy Acroftichum. Willd. n. 14. (Lingua cervina villofa, major et rufefcens; Plum. Fil. 110. t. 126.)—Fronds ovato-lanceolate, fomewhat wavy, briftly on both fides, like their ftalks; the margin flightly crenate and obfcurely dotted: barren ones emarginate: fertile ones acute.—Found by Plumier on the trunks of old trees, in Martinico. Nearly related to the laft, but diftinct. The *fronds* are fmaller and narrower, with much lefs evident marginal dots. The briftly hairs, fcattered over both furfaces, and alfo clothing the *ftalks*, in fome degree indeed partake of the nature of fcales, and are channelled, or flightly tubular, at their bafe; but they totally differ from the flat clofe fcales of the foregoing. The end of each barren *frond* is more or lefs emarginate, with a little tuft, or bud, of fcales in the fiffure.

A. *latifolium*. Broad-thick-leaved Acroftichum. Willd. n. 15. Swartz Syn. Fil. 9. Ind. Occ. 1589. (A. n. 1; Browne Jam. 104. A. longifolium; Willd. n. 16. Jacq. Coll. v. 2. 105. Swartz Syn. Fil. 9. Lingua cervina rigida et glabra; Plum. Fil. 118. t. 135.)—Fronds oblong-lanceolate, bordered, contracted at each end, fmooth on both fides, as well as the ftalks: fertile ones of the fame fhape, with a fmooth, narrow, membranous edge. Native of rocks, and old moffy trunks of trees, in Jamaica and Martinico. The *root* is thick and creeping, clothed at the extremity, and about the bottoms of the ftalks, with large, brown, chaffy fcales. *Fronds* fcattered, from a fpan to twelve or eighteen inches long, erect, entire, rigid, with a narrow, thin, membranous, entire border, a ftout reddifh rib, and fcarcely any traces of veins, both furfaces being peculiarly even and fmooth. The *ftalks* are fmooth and naked, angular, fometimes as long as the fronds, but generally fhorter. The fertile *fronds* agree with the barren ones in fhape and fize, as well as in their narrow, membranous, naked border, but the whole under fide, except that border, is denfely clothed with innumerable, minute, fnuff-coloured *capfules*, unaccompanied by any fcales or hairs. Jacquin defcribed his plant independent of Swartz, but we cannot find the leaft pretence for diftinguifhing them, even as varieties, the revolute pofition of the feed-bearing frond, in Plumier's plate, being merely owing to its young ftate, as his defcription implies. The *ftalks*, at an early period, may probably be fomewhat fcaly, though afterwards naked, even in the fertile *fronds*.

A. *crinitum*. Hairy Oval Acroftichum. Linn. Sp. Pl. 1523. Willd. n. 23. Ait. n. 2. Swartz Syn. Fil. 11. (Lingua cervina villofa, amplis foliis fubrotundis; Plum. Fil. 109. t. 125. Phyllitis crinita, latiffimo folio; Petiv. Fil. n. 145. t. 13. f. 14, copied from Plumier.)—Fronds elliptical, obtufe at each end, hairy, denfely fringed. Stalk and mid-rib hairy.—Gathered by Plumier in Martinico. Brought from the Weft Indies to Kew Garden, by Admiral Bligh, in 1793. A very fine and large fpecies, fpecimens of which are rare. Each *frond* is about a foot long, and half as much in breadth, flefhy; of a fomewhat yellowifh-green on the upper fide, befprinkled with flender briftly hairs, which, as well as the thick fringe, and the copious hairs on the *ftalks*, are coal-black. The fructification of this plant has not been afcertained, for what Plumier noticed, on the very young leaves, were moft probably the tumid or glandular bafes of the hairs; nor was he at all confident on this fubject. It may well, however, by analogy, be confidered as an *Acroftichum*. The *root* is tufted and fhaggy. We place this fern next to fpecies with which it moft nearly accords; the following one being incorrectly inferted before it by Willdenow.

A. *citrifolium*. Lemon-leaved Acroftichum. Linn. Sp. Pl. 1529. Willd. n. 22. Swartz Syn. Fil. 9. (A. n. 3; Linn. Amoen. Acad. v. 1. 269. Hemionitis parafitica; Linn. Sp. Pl. 1535. H. n. 2; Browne Jam. 95, from the author. Lingua cervina fcandens, citrei foliis, minor; Plum. Fil. 101. t. 116. Lonchitis vanilîæ folio; Petiv. Fil. n. 150. t. 15. f. 1.)—Fronds alternate, ovate, pointed; tapering at the bafe, on fhort ftalks, fmooth, reticulated with veins. Common ftalk creeping, fcaly.—Found on trees near rivulets in Martinico, and in the cooler, fhady, inland woods of the mountainous parts of Jamaica. The common *ftem*, or main *root*, creeps to a great extent, among moffes, or *Jungermanniæ*, up the old trunks of trees, attaching itfelf by numerous fhaggy radicles. It is clothed with large, acute, reticulated, finely toothed, pellucid fcales. The *fronds* are fituated alternately, about one or two inches from each other, on fhort bordered ftalks, fpreading in two directions, and are ovate or elliptical, of a fine fhining green, rather flefhy, very fmooth, two or three inches long, and one or one and a half broad, obfcurely crenate. There is only about half way up any decided mid-rib, but the principal veins, parallel at firft, branch out into regular, very elegant reticulations. Some of the uppermoft and youngeft *fronds*, according to Plumier, are entirely covered at the back, with minute, denfely crowded, bright chefnut, *capfules*, except a central naked line, indicating a mid-rib. We have no fpecimen in fructification, but feveral *capfules* accidentally fticking to one of the barren fronds, are remarkably fmall, very pale, with dark jointed rings. Linnæus originally adopted this fern, as an *Acroftichum*, from Plumier. When he received fpecimens of the fame from Browne, as a *Hemionitis*, he did not difcover that he had already claffed the plant in his fyftem; hence it occurs twice, even in his Sp. Pl.—*Hemionitis obtufa*, Willd. Sp. Pl. v. 5. 127, agrees very nearly with this *Acroftichum*, in fize and texture of the *fronds*, and moft precifely in their veiny reticulations; but its fructification is defcribed as effentially different.

Sect. 2. *Frond fimple, divided.* Four fpecies.

A. *pel-*

A. *peltatum*. Shield Acroftichum. Willd. n. 26. Swartz Syn. Fil. 11. Ind. Occ. 1593. (Ofmunda peltata; Swartz Prodr. 127. Lichen digitatus, geranii facie; Plum. Fil. 141. t. 50. f. A. Hepatica digitata fungoides; Pet. Fil. n. 188. t. 11. f. 3.)—Barren fronds in many forked, linear, radiating fegments: fertile ones undivided, roundifh-kidneyfhaped, finely crenate. — Found on the moffy trunks of trees, in Jamaica and Hifpaniola. This remarkable little fern has the habit of a *Trichomanes;* or of fome very fingular *Jungermanniæ*, brought by Mr. Menzies from New Zealand. The trailing creeping *root* throws up feveral ftalked, vertical, membranous, barren *fronds*, deeply divided into two principal lobes, and each of thofe irregularly into numerous, linear, fingle-ribbed fegments, all fpreading like a fan. The fertile *fronds* are about as tall, but fmaller, not an inch broad, roundifh, or fomewhat kidney-fhaped, horizontal; pale green and fmooth above; covered beneath with fmall, brown, fhining, annulated *capfules*.

A. *alcicorne*. Stag's-horn Acroftichum. Willd. n. 29. Swartz Syn. Fil. 12. 17. and 196. Brown n. 1. Ait. n. 3. (" A. Stemaria; Beauvois Fl. d'Oware, 2. t. 2." A. bifurcatum; Cavan. Leccion. 241. n. 587. Neuroplatyceros æthiopicus, nervofis foliis, cornu cervinum referentibus; Pluk. Amalth. 151. t. 429. f. 2. Cornu alcis Simbor dicta; Bont. Hift. Nat. 121, with a figure.)—Fronds fomewhat tufted, forked, coriaceous, ribbed; downy at the back; from a peltate, leafy, fpongy bafe.—Native of Guinea, Madagafcar, Java, and New South Wales, growing on the trunks of trees. This is a very large and ftriking fpecies, attached to the trees, or fometimes to rocks, by a peltate, dilated, fomewhat membranous, irregular, veiny, lobed bafe, of a fhining brown, a foot in diameter; thin at the edges; thick and fpongy in the centre, where it is fixed by downy branching *radicles*, and from whence it throws up two or three erect, flat, irregularly forked *fronds*, a foot or two in height, rather dilated upwards, entire at the edges, from one to two inches broad in the different parts; tapering at the bafe into a ftout, channelled, winged *footftalk*. The ultimate divifions are level-topped, linear, bluntifh, near a finger's length, each bearing at its back, in the lower half, a broad, irregular, denfe, naked mafs of innumerable brown *capfules*, fo difpofed, in clofe lines, that the whole mafs appears ftriated. The whole *frond* is ftrongly ribbed; green and fmooth above; whitifh and downy beneath; the ribs forked, fmooth, reddifh. We cannot but think the fingular dilated bafe of this fern is no other than one of its feminal leaves, or reputed *cotyledons*, greatly enlarged, and more permanent than ufual. *Polypodium quercifolium* of Linnæus, Willd. Sp. Pl. v. 5. 170, has fomething analogous in its barren *fronds*, which are only advanced a ftep nearer towards the proper habit of a fern. See Ger. Em. 1133.

Sect. 3. *Frond ternate.* Two fpecies.

A. *quercifolium*. Oak-leaved Acroftichum. Willd. n. 30. Swartz Syn. Fil. 12. Retz. Obf. fafc. 6. 39. " Schkuhr Crypt. 2. t. 3." (Ofmunda trifida; Jacq. Coll. v. 3. 281. t. 20. f. 3.)—Fronds ternate, bluntly lobed; fertile ones contracted, linear-oblong, fomewhat cut.—Found on trees in Ceylon, by Koenig. A delicate flender fern, whofe fmall, creeping, fcaly *root* fends up feveral erect *fronds*, from fix inches to a foot high, whofe downy *ftalks* are alfo fcaly in their lower part. The terminal *leaflet* is much the largeft, two or three inches long, and one broad, in the barren *fronds*, with downy ribs and edges, obtufe, flightly and varioufly finuated; the lateral ones an inch long, rounded, fomewhat lobed. The fertile *fronds* have each a much taller fmoother ftalk, but their *leaflets* are, as ufual, much fmaller and narrower, their backs covered, except the ribs and margin, with minute, ftalked, annulated *capfules*.

A. *auritum*. Eared Acroftichum. Willd. n. 31. Swartz Syn. Fil. 13. and 198. (Filix florida; Rumph. Amboin. v. 6. 78. t. 35. f. 1.)—Fronds ternate, pinnatifid, cut; fertile ones doubly pinnate, with linear entire fegments.—Native of Amboyna and Java, growing among coarfe graffes, on the banks of rivers. *Rumphius*, *Thunberg*. *Stalks* from one to two feet high, flender, angular, fmooth, black and fhining. *Fronds* fmooth, flightly veiny, of three principal *leaves* varioufly pinnatifid, lobed and cut, feveral inches long; the middle one largeft: the fertile *fronds* are more compound, with extremely narrow linear *leaflets* or fegments.

Sect. 4. *Frond pinnatifid.* Three fpecies.

A. *ferrulatum*. Finely-ferrated Acroftichum. Willd. n. 32. (Polypodium fufcum tenuiffimis denticulis ferratum; Plum. Fil. 63. t. 81.)—Fronds deeply pinnatifid; fegments linear-lanceolate, parallel; thofe of the barren ones finely ferrated, of the fertile ones entire.—Gathered by Plumier, in the forefts of Hifpaniola. The long, creeping, nearly fmooth, blackifh *root* fends up feveral *fronds*, twelve or eighteen inches high, on fhortifh fmooth *ftalks*. The outline of each is lanceolate, taper-pointed, compofed of a great number of crowded parallel fegments, divided almoft to the mid-rib, each fegment linear, acute, finely and fharply ferrated, fmooth on both fides, thin and almoft membranous, with a rib and many fimply forked veins. From the very extremity of the root fprings one *frond*, a little fmaller than the reft, but of a fimilar ftructure, except that its fegments are nearly all entire at the margins, and bear on their backs a denfe affemblage of minute chefnut-coloured *capfules*, fome few of the upper fegments only, with the point, being naked and ferrated. By the figure, this fern would be judged a *Blechnum*, and poffibly it might, if examined in a young ftate, prove to be fuch, the capfules extending over the leaf at an advanced period only, when the *involucrum* is often reflexed, or obliterated; but as no botanift, befides Plumier, appears to have feen the plant, we muft rely on his account of the matter, and he very precifely fays the back of this fertile *frond* is at firft, as it were, chagreen'd, and chefnut-coloured, being fubfequently entirely covered with fine duft, of the fame hue.

The others of this fection are, *A. lepidopteris* of Langfdorff and Fifcher, Ic. Fil. t. 2, from Brafil; and *A. brunneum* of Willdenow, from the Caraccas.

Sect. 5. *Frond pinnate.* Fifteen fpecies, befides one of Mr. Brown's.

A. *bifurcatum*. Slender Forked Acroftichum. Willd. n. 35. Swartz Syn. Fil. 12. " Schkuhr Crypt. t. 2. f. 3." (Ofmunda bifurcata; Jacq. Coll. v. 3. 282. t. 20. f. 4. Filicula corniculata infulæ Sanctæ Helenæ; Pluk. Mant. 83. Phyt. t. 350. f. 4.)—Fronds pinnate; leaflets linear, deeply divided, fpreading: thofe of the fertile fronds rounded; the lower ones more or lefs ternate; upper folitary.—Native of St. Helena and the Weft Indies. A flender delicate fern, allied in habit to *A. quercifolium*, defcribed in the third fection, but much fmaller, and with very different barren *leaflets*. Its height is about fix inches; the *ftalks* wiry, or almoft capillary.

A. *forbifolium*. Service-leaved Acroftichum. Linn. Sp. Pl. 1526. Willd. n. 38. Ait. n. 4. (Onoclea forbifolia; Swartz Syn. Fil. 112. Filix fcandens latifolia ferrata; Plum. Amer. 8. t. 12. Lingua cervina fcandens, foliis

laurinis

laurinis ferratis; Plum. Fil. 102. t. 117. Lonchitis calamifera, pinnis ferratis; Petiv. Fil. n. 153. t. 9. f. 8.)—Fronds pinnate, fmooth; leaflets of the barren ones lanceolate, pointed, ferrated; wedge-fhaped at the bafe: of the fertile ones linear, entire. Common-ftalk climbing, fcaly.—This climbs up the ftems of trees in various parts of the Weft Indies, the fcaly *common ftalk* being the thicknefs of a goofe-quill. *Fronds* alternate, fomewhat ftalked, a foot long, lanceolate; barren *leaflets* an inch and a half or two inches long, half an inch broad; fertile ones rather fhorter, and very much narrower; their edges flightly inflexed when young; the mid-ribs hairy; all the reft of the under furface denfely covered with *capfules*. Linnæus, long after he had publifhed this fpecies, confounded with it a very different plant, figured in Sloane's Jamaica, v. 1. t. 38, and in Pluk. Phyt. t. 287, (not 286,) f. 3, which is preferved in the Linnæan herbarium; but for want of knowing the fructification, we cannot determine its genus with any certainty. The *main-ftalk* of each *frond* is flightly winged, and the habit of the whole like a Danæa, (fee that article,) except the *leaflets* being alternate.

A. *aureum*. Great Golden Acroftichum. Linn. Sp. Pl. 1525. Willd. n. 41. Swartz Syn. Fil. 13. Purfh n. 1. "Schkuhr Crypt. 2. t. 1." (Lingua cervina aurea; Plum. Fil. 87. t. 104. Filix paluftris aurea, foliis linguæ cervinæ; Plum. Amer. 5. t. 7. Phyllitis ramofa aurea; Petiv. Fil. n. 142. t. 8. f. 5.)—Fronds pinnate; leaflets alternate, uniform, coriaceous, oblong, bluntifh, entire, fmooth, with reticulated veins; wedge-fhaped and unequal at the bafe: upper ones fertile, of the fame fize.—Native of bogs and wet places in the Weft Indies. Purfh found it in deep fwamps near the fea-coaft of Florida, in July. This is a noble *fern*, from five to nine feet high, confpicuous for its large broad *leaflets*, from a fpan to twelve inches in length, curioufly marked with oblong veiny reticulations. About four or five of the uppermoft, and perhaps the lower part of the next, are denfely covered at the back with innumerable *capfules*, of a golden chefnut colour.

A. *fraxinifolium*. Great Afh-leaved Acroftichum. Br. n. 2.—"Fronds pinnate, fmooth; leaflets ftalked, oblong-tonguefhaped, pointed, entire, reticulated: upper ones fertile, contracted."—Difcovered by Mr. Brown, in the tropical part of New Holland. Very clofely related to *A. aureum*, but differing in its acute and fhort-pointed *leaflets*.

A. *punctulatum*. Dotted Acroftichum. Willd. n. 45. Swartz Syn. Fil. 13. (A. punctatum; Linn. Suppl. 444, but not Sp. Pl. 1524. A. auriculatum; Lamarck Dict. v. 1. 36.)—Fronds pinnate; fertile leaflets lanceolate, acute, entire; dotted on the upper fide; lowermoft auricled; uppermoft fomewhat confluent.—Native of the ifle of Bourbon. This fpecies is known only from the Linnæan fpecimen, communicated by Thouin, which confifts of one *frond*, about two feet high, entirely fertile, with a longifh fmooth *ftalk*, and eight *leaflets*, each near three inches in length, and almoft one in breadth, tapering at both ends, undulated or fomewhat crenate; fmooth and bright green, befprinkled with depreffed dots, above; covered, nearly to the edge, with tawny capfules, beneath. The two lowermoft have each, at the outer fide, a large lobe, or auricle; the two or three uppermoft are more or lefs decurrent, fo that the top ones are confluent.

A. *alienum*. Various-lobed Acroftichum. Willd. n. 48. Swartz Syn. Fil. 13. Ind. Occ. 1595. (Filix latifolia, in pinnulas obtufas, et leviter crenatas, divifa; Plum. Fil. 10. t. 10. Ofmunda pulverulenta, pinnis vix ferratis; Petiv. Fil. n. 154. t. 8. f. 1.)—Fronds pinnate; leaflets pinnatifid; the upper ones confluent; lobes rounded, diftantly toothed, fmooth, reticulated with veins: fertile ones with narrower, lefs divided, leaflets.—Found by Plumier in Martinico; by Swartz on the mountains of Jamaica. Our fpecimens came from St. Kitt's. This is a fine fpecies, the *fronds* crowded, three or four feet high, fmooth and membranous, of a fine tranfparent green; the bafe of each common *ftalk* tumid, permanent. The lower *leaflets*, a foot long, are deeply pinnatifid, and fomewhat auricled; the middle ones roundly lobed; uppermoft wavy, and ftrongly confluent. All the ribs are white and fmooth. Fertile *fronds* entirely diftinct, fmaller and lefs divided or lobed in every part, but their fegments are extremely various. The under fide, except the ribs, is denfely covered, to the very edges, with brown *capfules*. None of the *ftalks* are fcaly.

Sect. 6. *Frond doubly pinnatifid, or doubly pinnate.* Thirteen fpecies, befides one of Mr. Brown's.

A. *cervinum*. Hart's-tongue Acroftichum. Willd. n. 50. Swartz Syn. Fil. 14 and 200. (Ofmunda cervina; Linn. Sp. Pl. 1521. O. linguæ cervinæ foliis; Plum. Fil. 132. t. 154. O. racemifera, phyllitidis folio; Petiv. Fil. n. 162. t. 8. f. 13.)—Barren fronds pinnate, with obliquely ovate, pointed, entire, bordered leaflets; fertile doubly pinnate, with linear, parallel, obtufe leaflets.—Apparently, by Plumier's account, not uncommon in wet woods, or about the banks of rivers, in Martinico. Dr. Swartz feems to have met with the fame in Jamaica, and we have it from St. Kitt's. The *root* is tufted, large, with numerous, long, branched, woolly fibres, and crowned with a great number of long, very narrow, tapering, brown and fhining fcales, among which ftand feveral *fronds*, about a yard high, very fmooth in every part. The *barren ones* are fimply pinnate, with 18 or 20 ftalked *leaflets*, a fpan long, and near two inches broad, entire, taper-pointed, with one rib, and many fine parallel tranfverfe veins, not reticulated; the bafe of each obliquely, and very unequally, wedge-fhaped. *Fertile fronds* fewer, doubly pinnate, confifting entirely of numerous fmall, feffile, parallel, but not crowded, *leaflets*, a quarter or one-third of an inch in length, covered at the back with light-brown ftalked *capfules*.

A. *Marantæ*. Scaly European Acroftichum. Linn. Sp. Pl. 1527. Willd. n. 53. Swartz Syn. Fil. 14. Prodr. Fl. Græc. n. 2344. Fl. Græc. t. 964, unpubl. "Schkuhr Crypt. 4. t. 4." Sprengel Crypt. 89. t. 2. f. 18, not good. (Lonchitis afpera Marantæ; Camer. Epit. 666.)—Fronds doubly pinnate, uniform; leaflets oblong, obtufe, entire, dilated or lobed at the bafe; the upper ones confluent; all clothed beneath with imbricated hair-pointed fcales. Stalks fhaggy.—We have already defcribed this fern (fee the article Notholæna, n. 1); but a more careful examination has induced us, both here and in the Prodr. Fl. Græc., to retain it in *Acroftichum*, as well as the two following fpecies; for the *capfules* appear to cover every part of the under fide of its *fronds*, except their fcaly mid-rib. With refpect to *Notholæna trichomanoides*, we readily concur with Mr. Brown in keeping it diftinct from *Pteris*; not having feen his *N. vellea* or *Pumilio*, we cannot form an opinion of thofe fpecies.

A. *velleum*. Woolly European Acroftichum. Willd. n. 54. Swartz Syn. Fil 14. Ait. n. 5. Prodr. Fl. Græc. n. 2345. Fl. Græc. t. 965, unpubl. (A. lanuginofum; Desfont. Atlant. v. 2. 400. t. 256. "Schkuhr Crypt. 8. t. 1. Lonchitis mollior lanuginofa, Ceterach facie; Barrel. Ic. t. 857, 858. Filicula crifpa, lanugine hepatici coloris veftita, ex infulis fortunatis; Pluk. Almag. 150. Phyt. t. 281. f. 4.)—Fronds doubly pinnate, elliptic-oblong, uniform; leaflets obtufe, ovate or heart-fhaped, notched laterally, very fhaggy on both fides, like the ftalks.

—Native

—Native of Spain, Barbary, Madeira, and Zante, in the fiſſures of rocks. Rather ſmaller than the laſt, with ſhorter *ſtalks* and denſer *fronds*, whoſe *leaflets* are ſhort and rounded, hairy on both ſides rather than ſcaly; their *common ſtalks* of a mahogany colour, their pubeſcence hoary, without the golden, or bright copper, hue of *A. Marantæ*. The *root* is neither ſcaly, nor creeping.

A. *diſtans*. Diſtant-winged Acroſtichum. (Notholæna diſtans; Brown Prodr. v. 1. 146.)—Fronds doubly pinnate, linear-lanceolate, uniform; branches oppoſite, diſtant, ſomewhat deltoid; leaflets oblong, obtuſe; the lower ones pinnatifid. Stalks and ribs ſhaggy, with hair-pointed ſcales. (See NOTHOLÆNA n. 2.) The *capſules* decidedly cover every part of the under ſide of each *leaflet*, except the ſcaly *rib*, in as broad and continuous patches, as in any other *Acroſtichum;* at leaſt when, like our ſpecimen, they are arrived at maturity.

A. *ſulphureum*. Sulphur-coloured Acroſtichum. Willd. n. 56. Swartz Syn. Fil. 15. Ind. Occ. 1597. Schkuhr Crypt. 4. t. 4.—Fronds doubly pinnate; leaflets oblong-wedgeſhaped, pinnatifid, cloven and notched; clothed with pale yellow powder at the back.—Native of ſhady rocks, in the ſouthern part of Jamaica. *Swartz*. Linnæus had numerous ſpecimens of this fern, which he left undetermined, or perhaps confounded with the following, from which they differ in the wedge-like ſhape, and more delicate texture, of their *leaflets*, as well as the pale ſulphur colour of the powder that covers their under ſurface. The maſſes of *capſules* are moſt denſe about the middle of each leaflet, the tips being naked.

A. *calomelanos*. Mealy Acroſtichum. Linn. Sp. Pl. 1529. Willd. n. 57. Hort. Berol. t. 41. Swartz Syn. Fil. 15. "Schkuhr Crypt. 4. t. 5." (Filix albiſſimo pulvere conſperſa; Plum. Fil. 30. t. 40. Pet. Fil. n. 156. t. 9. f. 11. F. non ramoſa major, caule nigro, ſurculis raris, &c.; Sloane Jam. v. 1. 92. t. 30. f. 2. Adiantum, nigro ſimile, albiſſimo pulvere conſperſum; Plum. Amer. 30. t. 44. A. calomelanos americanum; Pluk. Phyt. t. 124. f. 3.)

β. A. ebeneum; Linn. Sp. Pl. 1528? (Filix non ramoſa minima, caule nigro, ſurculis raris, &c.; Sloane Jam. v. 1. 92. t. 53. f. 1.)

Fronds doubly pinnate; leaflets elliptic-oblong, clothed with white powder beneath; lowermoſt cut or pinnatifid, with an auricle from the upper edge at the baſe; upper ones ſerrated; uppermoſt confluent.—Native of ſhady ſituations in the Weſt Indies. The *fronds* are tufted, and, when full grown, 12 or 18 inches high, with black ſhining *ſtalks;* the *leaflets* ſmooth, and of a fine deep green above; tapering, or wedge-ſhaped, at their baſe; in the upper part of each frond decurrent. Thoſe which bear *capſules* are leſs white, and rather grey, beneath, beſprinkled with white dots, the *capſules* moſt crowded about the middle region of each. Willdenow, on the poſitive aſſertion of Swartz, makes *A. ebeneum* of Linnæus a variety, Swartz eſteeming it the ſame plant in a young ſtate, when the *fronds* are only ſimply pinnate. But Willdenow declares that he had 100 times raiſed *calomelanos* from ſeed, without ever ſeeing the young *fronds* as repreſented by Sloane, t. 53. f. 1; and that his own figure was taken from a plant of one year's growth. Still we are diſpoſed to believe Sloane's plant belongs to *calomelanos;* though it is far otherwiſe with the Linnæan *ebeneum*, the original ſpecimen of which is ſimply pinnate, with broad, ſeſſile, tranſverſe, partly pinnatifid, *leaflets*, white beneath; the maſſes of *capſules* nearer the margin than the rib. The upper *leaflets*, indeed, are decurrent and confluent. Having ſeen but this ſingle ſpecimen, we are afraid to form any poſitive opinion.

A. *chryſophyllum*. Golden Acroſtichum. Willd. n. 58. Swartz Syn. Fil. 15. Ind. Occ. 1598. (Filix aurea, pinnulis rotundè inciſis diviſa; Plum. Fil. 33. t. 44. Adiantum pulverulentum aureum; Petiv. Fil. n. 160. t. 9. f. 9.) — Fronds doubly pinnate; leaflets ovate-oblong, obtuſe, ſtriated, poliſhed; clothed beneath with deep-yellow powder; lower ones pinnatifid; upper confluent and wavy.—Native of rather mountainous paſtures, in various parts of the Weſt Indies. We are indebted to J. V. Thompſon, eſq. for a ſpecimen of this elegant plant, which is conſpicuouſly diſtinguiſhed by the copious deep lemon-coloured powder, entirely covering the back of its *leaflets*, among which the *capſules* ſeem ſparingly, but uniformly, diſperſed and ſunk.

A. *albidulum*. Whitiſh Round-leaved Acroſtichum Willd. n. 61. Swartz Syn. Fil. 16 and 205. t. 1. f. 2.—Fronds doubly pinnate; leaflets rounded, obtuſe; powdery and white beneath; lowermoſt three-lobed; uppermoſt ſimple and undivided. Capſules denſely crowded towards the margin.—Gathered by Louis Nee, in South America. *Swartz*. A delicate little fern, three or four inches high, with a capillary *ſtalk*. The whole *frond* is oblong, once or twice compounded, in a ternate manner. *Leaflets* ſmooth and flat above; clothed beneath with white powder, which ſeems to conceal their mid-ribs. The *capſules* are brown, each with a ſhining ring, and are very numerouſly crowded, in denſe maſſes, over two-thirds of each lateral portion of the *leaflet*, from the edges, leaving a bare ſtripe in the middle. Hence this ſpecies ſhould ſeem referable to Mr. Brown's genus NOTHOLÆNA, to which we have already alluded (ſee that article); but the *capſules* compoſe much broader maſſes than in *N. trichomanoides*, and ſeem unattended by hairs.

A. *pteroides*. Bordered Acroſtichum. Brown n. 3.—"Fronds doubly pinnate, ſmooth; leaflets linear, reflexed at the margin."—Gathered by Mr. Brown, in the tropical part of New Holland. This ſpecies ſeems to anſwer to the character of Willdenow's *Lomaria*. We have ſeen no ſpecimen.

ACROTRICHE, ſo called by Mr. Brown, from ακρος, *terminal*, and θριξ, τριχος, *a hair*, in alluſion to the bearded points of the corolla.—Brown Prodr. Nov. Holl. v. 1. 547.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of five erect, concave, obtuſe, permanent leaves, with a pair of ſmaller ones at their baſe. *Cor.* of one petal, funnel-ſhaped, longer than the calyx; limb in five equal, ſpreading ſegments, each furniſhed, towards the point, with a tuft of hairs directed inwards. Nectary a cup-ſhaped gland, ſlightly lobed, ſurrounding the baſe of the germen. *Stam.* Filaments five, thread-ſhaped, equal, inſerted into the tube of the corolla, and not projecting beyond the mouth; anthers roundiſh-oblong, incumbent. *Piſt.* Germen ſuperior, globoſe; ſtyle columnar, ſhort; ſtigma ſimple. *Peric.* Drupa globular, depreſſed, ſlightly pulpy. *Nut* ſolitary, of five lobes and five cells, its ſurface minutely cellular. *Seeds* ſolitary.

Eſſ. Ch. Outer calyx of two leaves. Corolla five-cleft, funnel-ſhaped; ſegments with a deflexed beard at the extremity. Drupa nearly dry. Nut of five cells, its ſurface minutely cellular.

This genus, the produce of New Holland, conſiſts of humble much-branched ſhrubs, their *branches* generally divaricated. *Leaves* ſcattered. *Spikes* ſhort, lateral, or axillary. *Flowers* ſmall, white. *Drupa* ſmall, with but little

little thicknefs, or pulp. We have examined only one fpecimen of this fruit, but the above appears to be the true meaning of the author whom we follow, that the fhell of the *nut* is covered with fmall external cells, like a minute irregular honey-comb, to which the pulp of the *drupa*, filling the interftices of the lobes of the nut only, is attached. This character Mr. Brown feems to confider as very peculiar.

1. A. *divaricata*. Spreading-leaved Acrotriche. Br. n. 1.—Leaves lanceolate, pointed, divaricated, flat, green on both fides. Spikes axillary.—Found by Mr. Brown, at Port Jackfon, New South Wales. We are not certain of having met with this fpecies, among the various fpecimens fent by Dr. White, though one of them anfwers nearly to the characters, as far as we are able to inveftigate them. This fpecimen greatly refembles Monotoca *fcoparia* (fee that article); but the *leaves* are more divaricated, or deflexed, and not glaucous at the back.

2. A. *aggregata*. Aggregate Acrotriche. Br. n. 2.—"Leaves oblong-lanceolate, rather concave; glaucous beneath; fmooth at the edges."—Obferved by Mr. Brown, in the tropical region of New Holland.

3. A. *ramiflora*. Flowery-branched Acrotriche. Br. n. 3.—"Leaves linear-lanceolate, pointed, divaricated; ribbed, and difcoloured, beneath; recurved at the edges. Spikes fmall, fituated on the branches."—Gathered by the fame diftinguifhed botanift, on the fouthern coaft of New Holland.

4. A. *ferrulata*. Finely-ferrated Acrotriche. Br. n. 4.—Leaves linear-lanceolate, fpinous-pointed, fpreading, hairy or nearly fmooth; their edges fringed. Spikes axillary.—Gathered by Mr. Brown in Van Diemen's ifland, as well as on the fouth coaft of New Holland. We have fpecimens collected by general Grofe, communicated by A. B. Lambert, efq. A fmall dwarf *fhrub*, with denfely tufted, hairy *branches*. *Leaves* crowded, one-third or half an inch long, each tipped with a yellowifh prickle; three-ribbed, and rather glaucous, beneath; more or lefs hairy on both fides; their edges fringed with minute ftiff hairs, as if ferrated. *Flowers* in fhort, lateral, erect clufters. *Drupa* the fize of hemp-feed, depreffed, glaucous, or rather filky. *Nut* of five radiating lobes, or cells, the furface curioufly and minutely cellular.

5. A. *patula*. Spreading-branched Acrotriche. Br. n. 5.—"Leaves ovato-lanceolate, fpinous-pointed, flattifh, divaricated as well as the branches. Spikes fmall, axillary."—Native of the fouthern coaft of New Holland. *Brown*.

6. A. *ovalifolia*. Oval-leaved Acrotriche. Br. n. 6.—"Leaves ovate or elliptical, obtufe, pointlefs, flat, fmooth-edged. Spikes axillary. Drupa flightly cellular."—Gathered by Mr. Brown in the fame country as the laft.

7. A. *cordata*. Heart-leaved Acrotriche. Br. n. 7. (Styphelia cordata; Labill. Nov. Holl. 46. t. 63.)—Leaves heart-fhaped, flat; ftriated beneath. Flowers axillary, folitary or in pairs.—Found by Labillardiere, in Van Leuwin's land. A fpan high, erect, with fmall, rigid, thick *leaves*. *Drupa* fcarcely bigger than muftard-feed. Mr. Brown, not having feen this plant, is not abfolutely certain of its genus; though Labillardiere's defcription of the *corolla* anfwers to *Acrotriche*.

8. A. *depreffa*. Proftrate Acrotriche. Br. n. 8.—"Leaves ovate, fomewhat heart-fhaped, pointed, divaricated; convex above; veiny beneath. Stem depreffed. Spikes fmall, on the branches."—Gathered by Mr. Brown, on the fouth coaft of New Holland without flowers, and with unripe fruit.

ACT *of Faith*, l. 2, day which was held; and let the whole article refer to paft time. To the article fubjoin, fuch were the horrors of the inquifition in the reign of Philip II. *Auto da Fes* have not been frequent in late times; and it is perhaps more than half a century fince the laft, in which criminals were burnt.

Act *of Honour*, in *Commerce*, an inftrument drawn by a notary, when a bill is accepted for the honour of another perfon.

Acts, in *Poetry*, col. 2. l. *ult.*, dance, are indeed divided; but to compenfate for this retrenchment, the two concluding dances are fpun, &c.

ACTÆA, in *Botany*, fee our former article, (thus named, it is generally thought, from ακτη, *the fhore*, as being a plant that inhabits the fea-coaft, or the margins of waters. But this is not appropriate; and we fhould rather fuppofe Linnæus, the author of the name, had in his mind the refemblance of the plant, in fome refpects, to Elder, ακτεα of the Greeks.)—De Cand. Syft. v. 1. 381. Linn. Gen. 261. Schreb. 349. Willd. Sp. Pl. v. 2. 1139. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 562. Prodr. Fl. Græc. Sibth. v. 1. 356. Ait. Hort. Kew. v. 3. 286. Purfh 366. Juff. 235. Lamarck Illuftr. t. 448. Gærtn. t. 114. (Chriftophoriana; Tourn. t. 154. Cimicifuga; Linn. Syft. Veg. ed. 14. 505. Am. Acad. v. 8. 193. Schreb. 369. Willd. Sp. Pl. v. 2. 1244. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 324. Purfh 372. Juff. 234. Lamarck Illuftr. t. 487. Gærtn. t. 140.)—Clafs and order, *Polyandria Monogynia*, (or rather perhaps *Pentagynia*.) Nat. Ord. *Multifiliquæ*, Linn. *Ranunculaceæ*, Juff. *Spuriæ*, De Cand.

Eff. Ch. Calyx of four leaves. Petals four. Germens one or more, fuperior, ovate. Stigma nearly feffile. Pericarp of one cell, with many feeds.

Perennial herbs. *Leaves* ftalked, fimple, lobed, or varioufly cut, imitating compound leaves, according to De Candolle; (moft of them are certainly compound.) *Flowers* racemofe, white; *calyx* and *corolla* very fugacious; *ftamens* generally longer than the *petals*. Number in the parts of the *flower* very variable. *Stamens* fometimes imperfect in one flower, *piftils* in another.

The *roots* are draftic purges, in fome degree poifonous, and the herbage is not to be trufted.

Eight fpecies are wild in bufhy rocky ground, or cold woods, of the northern hemifphere; one in Europe; in Siberia or Japan two; in North America five.

This genus is very natural, notwithftanding a diverfity of characters in the feveral fpecies. In the *Cimicifugæ*, (which approach *Xanthorrhiza* and *Pæonia*,) the *germens* are numerous, which, as in true *Ranunculaceæ*, become aggregate *fruits*, burfting at their inner angle. The fecond fection, *Macrotys*, has a fimilar but folitary *fruit*, nor ought it to be feparated from the *Cimicifugæ*, any more than *Confolida* from *Delphinium*. *Actæa* of Linnæus, the third fection, has likewife a folitary *fruit*, exactly fimilar as to internal ftructure, but flefhy; yet not more to be feparated on that account, than the fomewhat berried fpecies of *Clematis* from the reft. From thefe confiderations, and the hints of Michaux and Richard, I return to the original opinion of Linnæus, and diftribute *Actæa* as follows. *De Candolle*.

We would obferve, in fupport of this decifion of our learned friend, that the anomalies in the *fruit* of *Fumaria*, whence many genera have been formed, appear to us analogous to thefe of *Actæa*. We are always happy to concur in the definition and confirmation of natural genera, in preference to the endlefs fplitting and fubdividing of fuch into artificial ones; which laft, being the eafieft of all things, is moft tempting to a beginner, efpecially as he thinks that, in purfuing it, he is exercifing great fagacity, and refining on on the wiſdom of ages. We ſhould however certainly keep *Actæa* and *Cimicifuga* ſeparate, were it not for *Macrotys*, which evidently, and almoſt neceſſarily, combines them.

Sect. 1. *Cimicifuga*. Fruit aggregate, burſting. Species one to four.

Sect. 2. *Macrotys*. Fruit ſingle, burſting. Species five and ſix.

Sect. 3. *Chriſtophoriana*. Fruit ſingle, not burſting. Species ſeven and eight.

Sect. 1. *Cimicifuga*. Linn.

Flowers with many ſtyles. Fruit dry, burſting, aggregate.

1. A. *Cimicifuga*. Bug-wort Actæa. De Cand. n. 1. Linn. Sp. Pl. 722. (Cimicifuga; Gmel. Sib. v. 4. 181. t. 70. Linn. Am. Acad. v. 2. 354. C. fœtida; Linn. Syſt. Nat. ed. 12. v. 2. 659.)—Germens four, nearly ſeſſile, very hairy. Cluſters panicled. Leaves divided in a once or twice ternate manner; their ſegments ovato-lanceolate, deeply toothed.—Native of various parts of Siberia, and of the north-weſt coaſt of America. See our former article Cimicifuga.

2. A. *podocarpa*. Stalked Actæa. De Cand. n. 2. (Cimicifuga americana; Michaux Boreal.-Amer. v. 1. 316.)—Germens four or five, ſtalked, ſmooth. Cluſters panicled. Leaves twice compound.—Found by Michaux, in ſhady woods on the mountains of Carolina, flowering in Auguſt and September. *Herb* two feet high, with the habit of *A. racemoſa*. *Calyx* of five ovate, concave leaves. *Capſules* four or five, ſmooth, compreſſed, pointed with the *ſtyles*, and each ſupported by a ſtalk half its own length. *De Cand.*

3. A. *cordifolia*. Heart-leaved Actæa. De Cand. n. 3. (Cimicifuga cordifolia; Purſh 373, excluding the ſynonym.)—Germens two or three, ſmooth, ſeſſile. Cluſters panicled. Leaves divided in a twice ternate manner; their ſegments five or ſeven lobed, ſerrated, heart-ſhaped at the baſe.—In ſhady woods on high mountains of Carolina, flowering in July. Reſembles *A. Cimicifuga* very much in general habit. *Purſh.* Like *A. racemoſa* and *podocarpa*, differing from the former in having numerous *capſules*, from the latter in their being ſeſſile. *Leaves* ſmooth, their broad ſegments, (we ſhould ſay *leaflets*,) almoſt reſembling vine-leaves. *Cluſters* elongated, wand-like, panicled, ſmooth, with a little acute *bractea* under each partial ſtalk, and two ſmaller lateral ones at its baſe. *De Cand.*

4. A. *palmata*. Palmate Actæa. De Cand. n. 4. (Cimicifuga palmata; Michaux Boreal.-Amer. v. 1. 316. Purſh 373. Hydraſtis; Lamarck Illuſtr. t. 500, which therefore is to be ſtruck out of our article Hydrastis. "H. canadenſis; Poir. Suppl. to Lam. Dict. v. 3. 71, but not of Linnæus.")—Germens twelve to fifteen, in a roundiſh head. Cluſters ſomewhat panicled, forked. Leaves palmate.—In the beds of mountain rivulets in Virginia and Carolina, flowering in July and Auguſt. A very tall and handſome plant; the *leaves* very large, and the *flowers* in great abundance. *Purſh.* The whole plant is ſmooth. *Stem* erect, ſimple, hollow. *Leaves* two, alternate; the *lower one* with a broadiſh *ſtalk*, an inch and a half long; the upper nearly ſeſſile; both wedge-ſhaped at the baſe, very broad, with from three to five oval lobes, rather acute, and cut or ſerrated in their upper part. *Flowers* terminal, corymboſe; their ſtalks forked, minutely downy; ſingle-flowered and naked at the extremity; bracteated below. *Calyx* of four orbicular leaves. *Germens* diſtinct, crowded into a head. *De Cand.*

Sect. 2. *Macrotys*. "Raf. Schmaltz in Bot. Journ. v. 2. 170."

Flowers with a ſingle ſtyle. Fruit dry, burſting.

5. A. *racemoſa*. Long-cluſtered Actæa, or Black Snake-root. Linn. Sp. Pl. 722. De Cand. n. 5. Willd. n. 2. Ait. n. 2. See Actæa n. 2. (Cimicifuga ſerpentaria; Purſh 372. Chriſtophoriana americana procerior et longiùs ſpicata; Dill. Elth. 79. t. 67.)—Piſtil one. Cluſters very long. Fruit dry, burſting. Leaves divided in a thrice-ternate manner, ſerrated, and ſomewhat cut.—In ſhady ſtony woods, from Canada to Florida, flowering in July and Auguſt. *Purſh.* Herbage like *A. ſpicata*, but larger; *flowers* like *A. Cimicifuga*, but monogynous; *fruit* like *A. cordifolia*, but of a ſingle *capſule*. It varies however occaſionally with two *piſtils*. *Cluſters* downy, very long and denſe. *Flowers* pale, fœtid, with ſmall, thick, gibbous, ſtalked *petals*, each tipped with a briſtly point. *Capſules* of two valves. *Seeds* oblong. *De Cand.* This ſpecies is often cultivated in England, as a hardy perennial. The copious white *flowers* are ornamental, but intolerably fœtid, like the ſcent, well known to ſurgeons, of a carious bone. The plant is often ſix or ſeven feet high.

6. A. *japonica*. Japaneſe Actæa. Thunb. Jap. 221. De Cand. n. 6. Willd. n. 3.—Piſtil one. Spikes very long. Leaves in three heart-ſhaped, palmate diviſions, with from three to ſeven lobes.—Gathered in Japan by Thunberg, who deſcribes it thus. *Herb* entirely ſmooth. *Leaves* ſtalked, ternate; leaflets ſtalked, ſimple, heart-ſhaped, cut, with five or ſeven notched lobes, ſerrated, a palm in length and breadth; pale underneath. General and partial *footſtalks* ſtriated, longer than the leaflets. *Spike* from a palm to a ſpan in length. *Calyx* and *corolla* ſoon falling. *Germen* oblong, ſmooth. *Style* none. The author gives no account of the fruit, ſo that it is impoſſible to ſay whether this ſpecies belongs to the ſecond or third ſection.

Sect. 3. *Chriſtophoriana* of Tournefort.

Fruit ſingle, pulpy, not burſting.

7. A. *ſpicata*. Black-berried Actæa, or Herb Chriſtopher. Linn. Sp. Pl. 722. Willd. n. 1, α. Ait. n. 1, α. Fl. Brit. n. 1. Engl. Bot. t. 918. Bull. Fr. t. 83. Fl. Dan. t. 589. (Chriſtophoriana; Cluſ. Hiſt. v. 2. 86. Ger. Em. 979. Lob. Ic. 682.)—Piſtil one. Berry nearly globular. Petals as long as the ſtamens. Cluſter ovate. Leaves divided in a twice or thrice ternate manner; ſegments ovato-lanceolate, ſerrated and cut.—Native of moiſt and ſhady mountainous ſituations, in moſt countries of Europe; very rare in England, being confined to the north-weſt part of Yorkſhire; flowering in May. *Roots* fibrous. *Berries* always black. See Actæa n. 1.

8. A. *brachypetala*. Red or White-berried Actæa. De Cand. n. 8. (A. americana; Purſh 366. A. ſpicata β et γ; Willd. n. 1. Ait. n. 1. A. rubra; Willd. Enum. 561. Bigelow Boſt. 129. Aconitum baccis niveis et rubris; Cornut. Canad. 76. t. 77. Moriſ. ſect. 1. t. 2. f. 7.)—Piſtil one. Berry ovate-oblong. Petals ſhorter than the ſtamens. Cluſter ovate. Leaves divided in a twice or thrice ternate manner; ſegments ovato-lanceolate, ſerrated and cut.—In ſhady rocky woods, in rich vegetable mould, from Canada to Virginia, principally on the mountains, flowering in April and May. Known by the name of Red-and White Cohoſh, and conſidered by the natives as a valuable medicine. *Purſh.* *Root* more tuberous than in the laſt. *De Cand.* *Berries* bright red, or white; there is ſaid to be a blue-berried variety alſo. A plant with ſmaller white *berries*, tipped with red, on large thickened *ſtalks*, is thought by Dr. Bigelow a diſtinct ſpecies. His ſpecimen juſtifies this opinion, and differs alſo in the terminal *leaflets* being ovate, not three-lobed. This merits further enquiry.

ACTINEA, from *ακτιν*, *a ray*; meaning merely a radiated flower; nor is there any thing unuſual or ſtriking, relative to the part in queſtion in the inſtance before us.

us.—" Juff. in Ann. du Muf. v. 2. 425." Willd. Sp. Pl. v. 3. 2213.—Clafs and order, *Syngenefia Polygamia-fuperflua.* Nat. Ord. *Compofitæ difcoideæ*, Linn. *Corymbiferæ*, Juff.

Gen. Ch. *Common Calyx* nearly flat, of many fpreading, lanceolate, fomewhat imbricated, nearly equal, permanent leaves, fhorter than the florets. *Cor.* compound, radiated; *florets* of the difk perfect, numerous, tubular, longer than the calyx, five-toothed; thofe of the radius in a fimple feries, ligulate, wedge-fhaped, obtufe, flat, three-cleft almoft half way down, twice as long as the calyx. *Stam.* in the tubular florets, Filaments five, capillary, fhort; anthers acute, united into a prominent tube. *Pift.* in the fame, Germen oblong, downy; ftyle thread-fhaped, nearly as long as the ftamens; ftigmas two, capitate, divaricated between the points of the anthers. In the ligulate florets, ftyle very fhort. *Peric.* none. *Seeds* in each floret folitary, oblong, hairy, crowned with feveral membranous long-awned fcales. *Recept.* convex, naked.

Eff. Ch. Receptacle naked. Seed-down of feveral chaffy, pointed, awned fcales. Calyx of many equal leaves.

1. A. *heterophylla.* Various-leaved Sun-wort. Willd. n. 1. Juff. as above, t. 61. f. 2.—Gathered by Commerfon at Monte Video. The *ftem* is fhrubby, angular, furrowed; the *branches* leafy, downy when young, fingle-flowered. *Leaves* alternate, feffile, linear-oblong, an inch or two in length, rather flefhy, flightly downy on both fides, blunt, with a fmall point; the lower ones generally furnifhed with a ftrong tooth at each fide; the upper fmaller, narrower and entire. *Flowers* folitary, on long, naked, downy ftalks, at the end of each branch, erect, an inch in diameter. *Calyx* downy. *Radius* fhort, yellow. *Difk* broad, convex, darker coloured; the *florets* numerous, externally hairy in their upper part. Awns of the *feed-down* reddifh, as long as the partial *corolla.*

This plant appears to us very nearly related to HELENIUM, (fee that article,) into which genus it might, without any violence to nature, have been introduced. Even the *calyx* fcarcely betrays a difference, for that of *Helenium* can hardly be confidered as of one leaf, any more than thofe of *Helianthus*, *Rudbeckia*, &c. The ftructure of the *radius*, downinefs of the *feeds* and of the tubular *florets*, pointed chaffy *feed-crown*, all agree. We have not indeed feen the defcription given by the learned author of this genus, nor will our fpecimen admit of an inveftigation of the more recondite parts of fructification, without injury to fo great a rarity; but we fhould not fcruple to fink *Actinea* in *Helenium*, according to our prefent means of judging.

ACTINELLA, a diminutive of ACTINEA, (fee that article,) and therefore inadmiffible, as being contrary to one of the foundeft laws of nomenclature. Nor is this genus, probably, any more than *Actinea*, diftinct from *Helenium*, next to which *Actinella* is placed by Purfh, Fl. Amer. Sept. 494. 560, who defcribes it as follows, citing Perf. Syn. v. 2. 469, and, as a fynonym, *Actinea*, Juff. in Ann. du Muf. v. 2. 425.—Clafs and order, *Syngenefia Polygamia-fuperflua.*

Eff. Ch. Receptacle naked. Seed-crown of from four to fix chaffy-awned fcales. Calyx of many equal leaves.

1. A. *lanata.*—Clothed all over with woolly down. Leaves linear; pinnatifid upwards. Stalks elongated, fingle-flowered. Radiant florets with two teeth. Seeds five-fided, fmooth.—Found by Governor Lewis, on the high lands of the Koofkoofky. Perennial, flowering in June and July. The whole *herb* is clothed with white woolly down. *Stem* branched, round. *Branches* alternate, fubdivided in the upper part; their ultimate divifions fingle-flowered. *Leaves* of the main ftem alternate, linear, dilated and pinnatifid upwards, toothed; thofe of the branches linear, undivided. *Flower-ftalks* terminal, fwelling towards the end. *Flowers* orange-coloured, the fize of *Tagetes erecta.* *Calyx* oblong, fimple, of from twelve to fourteen linear-lanceolate acute leaves. *Florets* of the *radius* from twelve to fourteen, oblong, ribbed, each with two teeth; thofe of the *difk* tubular, of the fame colour. *Down* of from four to fix whitifh, acute, chaffy fcales, occafionally torn. *Seeds* oblong, prifmatic, with five angles. It refembles in habit Juffieu's *Actinea* in Ann. du Muf. v. 2. t. 61. f. 2. *Purfh.*

We are entirely at a lofs to account for the change in the generic name, if the genera are fuppofed the fame, and it feems fortunate that both are likely to be funk in *Helenium.*

ACTINOCARPUS, from ακτιν, *a ray*, and καρπος, *fruit*, alluding to the radiating pofition and form of the capfules. Mr. Brown was obliged to invent this very expreffive name for the *Damafonium* of Juffieu, becaufe the latter appellation has been adopted for another genus, in the works of Schreber and Willdenow.—Brown Prodr. Nov. Holl. v. 1. 342. (Damafonium; Juff. Gen. 46. Tourn. t. 132.)—Clafs and order, *Hexandria Hexagynia.* Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juff. *Alifmaceæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of three ovate, concave, permanent leaves. *Cor.* Petals three, roundifh, flat, fpreading, larger than the calyx, deciduous. *Stam.* Filaments fix, awl-fhaped, fhorter than the corolla; anthers roundifh. *Pift.* Germens fix or eight, erect, combined at the bafe; ftyles fhort, fpreading; ftigmas fimple. *Peric.* Capfules as many, combined at the bafe, fpreading in the form of a ftar, compreffed, pointed, of one cell, burfting at the upper edge. *Seeds* two, elliptical, ftalked, one erect, inferted into the bottom of the capfule, the other at its curve, horizontal.

Eff. Ch. Calyx of three leaves. Petals three. Capfules fix or eight, compreffed, combined at the bafe, fpreading ftar-wife. Seeds two.

1. A. *Damafonium.* Great Starry-plantain. (Alifma Damafonium; Linn. Sp. Pl. 486. Willd. Sp. Pl. v. 2. 277. Sm. Fl. Brit. 401. Engl. Bot. t. 1615. Curt. Lond. fafc. 5. t. 28. Ait. Hort. Kew. v. 2. 332. Damafonium ftellatum; Dalech. Hift. 1058. Tourn. Inft. 257. Raii Syn. 272. Plantago aquatica minor ftellata; Ger. Em. 417.)—Capfules fix, burfting lengthwife; without wings at the bafe.—Native of watery places on a gravelly foil, in England, near London, as well as in Shropfhire, Suffolk, and Suffex. It grows alfo in France and Siberia; flowering in June and July. The *root* is perennial, of many long fimple fibres, as ufual with aquatic herbs. *Leaves* all radical, floating, ftalked, elliptic-oblong, fmooth, two inches long, with a ftrong mid-rib, and two finer ribs, at each fide, near the margin. *Footftalks* dilated and winged below. *Flower-ftalks* one or two, radical, erect, taller than the leaves, round, fimple, each bearing two or three umbels of whitifh *flowers*, giving it a whorled appearance. The *capfules* refemble thofe of the *Illicium*, or Starry Anife, in fize and general figure.

2. A. *minor.* Smaller Starry-plantain. Br. n. 1.—"Capfules eight, burfting tranfverfely; with eight permanent wings at the bafe. Leaves three-ribbed."—Native of the neighbourhood of Port Jackfon, New South Wales, where it was obferved by Mr. Brown.

We have here admitted this genus, from deference to the authority of Mr. Brown, who efteems it abundantly different from *Alifma*, in the definite number of the *capfules*, their ftellated difpofition, their combination at the bafe, and their two *feeds*. In the habit of the plants there is no difference.

 The

The Linnæan remark that "there is rarely a genus in which one or other part of the fructification does not prove lefs conftant, or uniform, than the reft," *Phil. Bot. fect.* 170; a rule too much neglected by founders of new genera in all ages and countries, fhould teach us caution in every inftance, and in the prefent perhaps might juftify keeping the Linnæan ALISMA entire. See that article.

ACTINOTUS, fo named by M. Labillardiere, Nov. Holl. v. 1. 67, from ακτινωτος, *radiated*, alluding to the form of the involucrum. See ERIOCALIA, which laft name is retained by Profeffor Sprengel, in his *Prodr. Plant. Umbellif.* 27, who gives the following effential character of this very curious genus.

Fruit ovate, villous, with five flender ribs, and crowned by the calyx. Umbel capitate. Involucrum very long, woolly.

The only two fpecies hitherto difcovered are defcribed in their proper place.

ACTON, fecond article, for 853 *r.* 885. Add, Alfo, a town of Vermont, in the county of Windham, containing 245 inhabitants.

ACWORTH, l. 3, in 1810, 1523 inhabitants.

ADAIR, in *Geography*, a county in the diftrict of Kentucky, which, with the town of Columbia, has 6011 inhabitants, including 956 flaves.

ADAM, ROBERT. For Kirkaldy, in Fifefhire, *r.* Edinburgh; and for Edinburgh *r.* that city.

ADAMAH. For Nephtali *r.* Naphtali.

ADAMS, in *Geography*, l. 2, *r.* 1763. At the clofe, add —Alfo, a town of New Hampfhire, in the county of Coos, containing 244 inhabitants.—Alfo, a county of Ohio, containing 9434 inhabitants.—Alfo, a townfhip of Ohio, in the county of Wafhington, having 620 inhabitants.—Alfo, a county of Pennfylvania, containing 15,152 inhabitants, of whom 71 are flaves.

ADANSON, MICHAEL, in *Biography*, the article already given requires fome correction. This celebrated botanift belonged to a Scottifh family, attached to the fortunes of the Pretender. He died of *mollities offium*, Auguft 3d, 1806, and not before, aged 79 years and 4 months. M. Cuvier, in the *Memoires de l'Inftitut*, v. 7, has publifhed an elaborate *eloge* of Adanfon, in which great juftice is done to his ardour and acutenefs in the purfuit of botany, and to his patience and magnanimity under great fufferings and privations, incident to the political convulfions of his country. The writer of this knew him at Paris in 1786. He was evidently a man of an active and penetrating mind, but devoted to his own imaginations and hypothefes, always attacking, as might be expected, the botanical fyftem of Linnæus, but betraying a weaknefs unworthy of his own talents, in contemptuoufly reprobating the whole principles and performances of the illuftrious Swede. Yet we are poffeffed of two letters from Adanfon to Linnæus, both amicable and complimentary in the higheft degree. In the firft, dated June 28, 1754, the writer offers to communicate his difcoveries and remarks made at Senegal, fpeaks of Gum *Bdellium* as the *Thus*, or Frankincenfe, of Europeans, ufed for fumigation in churches, and exhorts Linnæus to continue to illuftrate botanical fcience. The fecond, dated October 2, 1758, acknowledges the receipt of a moft welcome letter from Linnæus; laments the recent death of Anthony de Juffieu, and the illnefs of Bernard de Juffieu, which obliged Adanfon to undertake the department of herborizing with the ftudents. He fubjoins an account of the African tree Baobab, which Bernard de Juffieu had named *Adanfonia*, and gives its natural generic character at length, profeffedly in the Linnæan manner, with feveral articles of information which Linnæus afterwards introduced into his account of *Adanfonia*. This letter moreover contains fome matters relating to Zoology; mentions the great want of accuracy in the characters of almoft all the exotic genera of plants, defcribed by travellers, which the writer had examined at Senegal, and concludes with moft refpectfully thanking Linnæus for his promife to make Adanfon a member of the Upfal Academy of Sciences. This promife appears never to have been fulfilled. It might well be difpenfed with when Adanfon, in the following year, read before the *Academie des Sciences*, at Paris, that hiftory of botany, which now makes a part of the preface of his work, entitled *Familles des Plantes*, publifhed in 1763. In this the fyftem of Tournefort is exalted above the natural as well as artificial methods of Linnæus, and the perfon whofe correfpondence he had been courting, and to whofe "favour and friendfhip" he had fo lately recommended himfelf, is depreciated in the moft contemptuous manner, in almoft every thing he had done for the fcience of botany. This has been attributed to the correfpondence of Adanfon being flighted by Linnæus; but there was hardly time for fuch a confequence. He rather appears to have found it expedient and popular to attack the fame of the great naturalift, to whofe merit the French were then becoming fenfible, and who threatened to eclipfe the honours fo long enjoyed by Tournefort. Notwithftanding Tournefort's merits, Adanfon tells us, p. 154, that "he has reafon to think his own *Familles* will be adopted, as containing the fum of all the knowledge acquired in the fcience of botany." An author feldom errs more than when he prophefies the fuccefs of his own works. Had Adanfon foretold that his performances would never be refuted, he had been right, for they have flept in almoft total neglect. We have given a fufficient account of his method and nomenclature, under the head of NATURAL ORDERS. We are aware that it is ftill popular at Paris to commend him, nor would we deprive him of any praife which he can enjoy, without injuftice to his predeceffors, or without his authority leading to fcientific error, and hiftorical miftake.

ADDISON, JOSEPH, l. 2, *r.* Ambrofbury for Abrofbury.

ADDISON, *County*, l. 5, contained, in 1810, 19,998 inhabitants, difperfed in 24 townfhips.

ADDISON, l. 4, for 401 *r.* 1100. Add—Alfo, a town of Wafhington county, in the diftrict of Maine, containing 399 inhabitants.—Alfo, a townfhip of Pennfylvania, in the county of Somerfet, having 678 inhabitants.

ADENANTHOS, in *Botany*, fo named by Labillardiere, from αδην, *a gland*, and ανθος, *a flower*, on account of the glands, in the form of fcales, attached to the permanent bafe of the corolla.—Labill. Nov. Holl. v. 1. 28. Brown Tr. of Linn. Soc. v. 10. 151. Prodr. Nov. Holl. v. 1. 367.—Clafs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juff. Brown.

Gen. Ch. *Cal.* Involucrum fingle-flowered, of from four to eight fhort, imbricated leaves. *Cor.* of one petal, inferior, tubular, cut round near the bafe, and from above that part deciduous; its limb in four deep, lanceolate, flat fegments, turned to one fide. Nectary four glands, united with the permanent bafe of the corolla at its infide. *Stam.* Filaments four, fhort, inferted into the difk of each fegment of the corolla; anthers oblong, erect. *Pift.* Germen fuperior, roundifh; ftyle thread-fhaped, longer than the corolla; ftigma vertical, awl-fhaped, rather thicker than the ftyle. *Peric.* Nut tumid, of one cell, with a fingle *feed*.

Eff. Ch. Involucrum imbricated, fingle-flowered. Corolla four-cleft, fplitting circularly near the bafe. Nectary of four glands, attached to the bottom of the corolla. Style longer

longer than the corolla. Stigma vertical, awl-ſhaped. Nut tumid.

A ſhrubby New Holland genus. *Leaves* ſcattered, various in the different ſpecies. *Flowers* axillary, ſolitary, reddiſh; rarely terminal, ſomewhat aggregate, and yellowiſh. *Brown.*

1. A. *obovata.* Obovate-leaved Adenanthos. Labill. Nov. Holl. v. 1. 29. t. 37. Brown n. 1.—Leaves obovate, entire, ſmooth.—Obſerved by M. Labillardiere, as well as by Mr. Brown, on ſtony hills in Lewin's land, on the ſouth coaſt of New Holland. *Branches* round, thickly clothed with coriaceous *leaves*, near an inch long, broadly obovate, triple-ribbed, beſprinkled with blackiſh glandular dots; their lateral ribs ſending off veins towards the margin. *Flowers* axillary, ſolitary, twice as long as the leaves. *Involucrum* of ſix or eight ſmooth ſcales. Points of the *corolla* ſcarcely hairy on the inner ſide. *Style* hairy, except at the top and bottom. *Stigma* rather ſwelling. *Labill.*

2. A. *cuneata.* Wedge-leaved Adenanthos. Labill. Nov. Holl. v. 1. 28. t. 36. Brown n. 2.—Leaves wedge-ſhaped, ſilky; bluntly toothed at the extremity.—Gathered near the ſea-coaſt at Lewin's land, by Brown and Labillardiere. We have a ſpecimen from the latter. This *ſhrub* is about the height of a man. *Leaves* hardly an inch long, erect, ſtalked, ſilky and ſilvery on both ſides, with three principal ribs, ſometimes combined at the lower part; their abrupt extremity unequally and bluntly notched. *Flowers* towards the tops of the branches, axillary, ſtalked. *Involucrum* fringed, ſilky, as well as the outſide of the *corolla*, whoſe ſegments are denſely bearded on the inſide. *Style* ſwelling and hairy in the middle.

3. A. *ſericea.* Silky-leaved Adenanthos. Labill. Nov. Holl. v. 1. 29. t. 38. Brown n. 3.—Leaves thread-ſhaped, twice-ternate, ſilky. Flowers axillary, ſolitary. Style ſmooth.—Native of the ſandy ſea-coaſt of Lewin's land, where it was found by the authors cited. Our ſpecimen was gathered by Mr. Menzies, at King George's ſound, on the weſt coaſt of New Holland. The *branches* are round and ſilky, the younger ones moſt denſely leafy. *Leaves* about an inch and a half long, twice or thrice deeply three-cleft, in narrow blunt, thread-ſhaped ſegments, clothed with ſilky hairs. *Flowers* towards the tops of the branches, denſely hairy, rather longer than the leaves. *Style* ſmooth in every part, rather ſwelling in the middle.

4. A. *terminalis.* Terminal-flowered Adenanthos. Brown n. 4.—"Leaves thread-ſhaped, three-cleft; their lateral ſegments cloven; middle one undivided. Flowers terminal, ſolitary or three together. Style ſhaggy."—Gathered by Mr. Brown, at Flinder's land, on the ſouth coaſt of New Holland, in low ground near the ſea-coaſt.

ADENODUS, ſo called by Loureiro, from ἀδὴν, *a gland*, becauſe of the glands of the flower, which remain to accompany the fruit.—Loureir. Cochinch. 294.—Claſs and order, *Dodecandria Monogynia.*

Gen. Ch. *Cal.* Perianth inferior, of five lanceolate, reflexed, deciduous leaves. *Cor.* Petals five, ovate, nearly erect, the length of the calyx, divided half way down into many thread-ſhaped ſegments. Nectary five large, depreſſed, permanent, two-lobed glands. *Stam.* Filaments fifteen, ſhort, ſpreading, inſerted into the receptacle; anthers oblong, quadrangular, erect, ſplit and reflexed at the ſummit. *Piſt.* Germen ſuperior, elongated; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma acute. *Peric.* Drupa ovate-oblong, ſmall, ſmooth, ſingle-ſeeded. *Seed.* Nut oblong, rugged.

Eſſ. Ch. Calyx five-leaved, inferior. Petals five, fringed. Nectariferous glands two-lobed, permanent. Drupa with a ſingle ſeed.

1. A. *ſylveſtris.* Cây Côm tláng, of the Cochinchineſe.—Native of woods in Cochinchina. A middle-ſized *tree*, with ſpreading branches. *Leaves* alternate, ovato-lanceolate, ſerrated, ſmooth. *Spikes* nearly terminal. *Flowers* variegated with red and white. *Loureiro.*

De Theis, Gloſſaire de Botanique, 6, has anticipated us in the remark, that this plant approaches the genus ELÆOCARPUS. (See that article.) Indeed we have ſcarcely a doubt of its being one of that genus, though, having ſeen no ſpecimen, we cannot abſolutely aſſert this point. Still leſs can we determine whether Loureiro's plant be any of the ſpecies already known.

ADENOSMA, a word compoſed of ἀδὴν, *a gland*, and ὀσμὴ, *a ſcent*, which expreſſes the glandular and fragrant nature of the herbage.—Brown Prodr. Nov. Holl. v. 1. 442.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ. *Scrophularinæ*, Brown.

Eſſ. Ch. Calyx in five deep ſegments; the upper one largeſt. Corolla ringent; upper lip undivided, lower in three equal lobes. Anthers approaching each other. Stigma dilated. Capſule ovate, beaked, ſeparable into two parts. Receptacles united to the ſutures.

1. A. *cærulea.* Blue Adenoſma. Br. n. 1.—Gathered by ſir Joſeph Banks, and Dr. Solander, in the tropical region of New Holland. Seen by Mr. Brown in a dry ſtate only. An annual downy *herb*, beſprinkled with glands, and ſmelling like mint, turning black in drying. The *ſpike* is leafy; or the *flowers* may be termed axillary. *Calyx* rough with jointed hairs, and accompanied by a pair of *bracteas*. *Corolla* blue. *Brown.*

This author remarks, that *Ruellia uliginoſa* and *balſamea* conſtitute a genus nearly akin to the preſent, and that both are related to the order of *Acanthi*, or *Acanthaceæ*, but eſpecially *Adenoſma*, on account of its beaked *capſule*.

ADENOSTEMMA, Forſt. Gen. t. 45. See LAVENIA.

ADEODATUS, POPE, in *Biography*, denominated "Dieu donné," God's Gift, was by birth a Roman, and by profeſſion a monk. He became pope in 672, and died in 676.

ADEPS. Subjoin, See CELLULAR *Subſtance.*

ADERME, in *Commerce.* See QUINTAL.

ADIANTUM, in *Botany*, an ancient Latin name, which by Pliny's account, book 22. chap. 21, appears to have belonged to the very ſpecies of fern, *Adiantum Capillus-Veneris*, to which it is ſtill applied. But that account, like half his work, as we have it, is a manifeſt jumble of various ill-aſſorted materials. What he hints there, as well as in the beginning of the 17th chapter of his 21ſt book, relative to the permanency of the leaves, whether originally reported of the ſame plant, or of ſome other, is not contrary to truth, inaſmuch as this fern is almoſt always verdant. His derivation of the name, from α, *without*, or *contrary to*, and διαίνω, *to moiſten*, becauſe water trickles off the leaves without wetting them, may ſatisfy us, for want of a better; but how much better would ſuch an explanation ſuit any glaucous herb, like the cabbage.—Linn. Gen. 560. Schreb. 757. Willd. Sp. Pl. v. 5. 427. Mart. Mill. Dict. v. 1. Swartz Syn. Fil. 120. Sm. Fl. Brit. 1138. Prodr. Fl. Græc. Sibth. v. 2. 278. Brown Prodr. Nov. Holl. v. 1. 155. Ait. Hort. Kew. v. 5. 524. Purſh 670. Juſſ. 15. Tourn. t. 317. Lamarck Dict. v. 1. 40. Illuſtr. t. 870.—Claſs and order, *Cryptogamia Filices.* Nat. Ord. *Filices dorſiferæ*, *annulatæ*.

Eſſ.

Eff. Ch. Maffes of capfules oblong, or roundifh, inferted into each marginal, reflexed, limited involucrum.

Such is the character of the original *Adiantum* of all authors, a numerous genus, from which Dr. Swartz has firft diftinguifhed his CHEILANTHES, to be treated of hereafter in its proper place, whofe character is, that the maffes of *capfules* are really placed on the margin of the leaf itfelf, each being covered only by its refpective *involucrum*. The difference is nice, and efcaped every previous obferver, but we believe it to be a very found one, inafmuch as it is attended by a difference of habit, and the *involucrum* of *Cheilanthes* is not always neceffarily interrupted, though the maffes of capfules, *fori*, are diftinct.

In our former article, (fee ADIANTUM,) forty-fix fpecies are briefly enumerated, with a particular account of two, which need not here be repeated. As the genus now ftands, Willdenow has fifty-four, (befides nineteen of *Cheilanthes*,) difpofed in fections, of which we fhall give examples, with additions of new fpecies.

Sect. 1. *Frond fimple.* Three fpecies in Willdenow.

1, A. *reniforme*, Linn. Sp. Pl. 1556; 2, *afarifolium* of Willdenow, Lamarck f. 2; and 3, *philippenfe*, Linn. Sp. Pl. 1556. We have none to add. For *A. fagittatum*, fee LINDSÆA.

Sect. 2. *Frond ternate.*

4, A. *triphyllum* only. Sm. Plant. Ic. t. 74.

Sect. 3. *Frond pinnate.* Twelve fpecies in Willdenow.

5, A. *macrophyllum*, Swartz Ind. Occ. 1707; 6, *obliquum*, Willd.; 7, *lunulatum*, Willd. Phytog. t. 9. f. 1; 8, *arcuatum*, Sw.; 9, *pumilum*, Sw. Pluk. Phyt. t. 251. f. 4; 10, *caudatum*, Linn. Mant. 308; 11, *hirfutum*, Willd. from the ifland of Mauritius; 12, *rhizophorum*, Sw. Syn. 320, from the fame country. We have two to add.

A. *platyphyllum.* Broad-leaved Maidenhair. Swartz in Stockh. Tranf. for 1817. 74. t. 3. f. 6.—Frond pinnate; leaflets ftalked, ovate, taper-pointed, nearly entire; oblique, and dilated upwards, at the bafe; glaucous beneath. Dots oblong, contiguous along the whole margin.—Native of fhady woods in Brafil. *Freyreis.* A foot high, or more, confifting of from three to fix alternate *leaflets*, two inches long and one broad, with numerous divaricating veins; the barren ones very inconfpicuoufly ferrated. *Common ftalk* fmooth, of a fhining black. The infertion of the *capfules* is by no means well explained, either in the figure or defcription.

A. *paradoxum.* Ambiguous Maidenhair. Br. n. 1.—"Frond pinnate; leaflets heart-fhaped, oblong-ovate, or lanceolate; their veins underneath obfolete. Dots linear, uninterrupted."—Gathered by Mr. Brown, near Port Jackfon, New South Wales.

Sect. 4. *Frond partly bipinnate.* Five fpecies.

13, A. *deltoideum*, Sw. Ind. Occ. 1705; 14, *denticulatum*, ibid. 1711; 15, *falcatum*, ibid. 1715; 16, *varium*, Willd., found by Humboldt and Bonpland, near Caripe, in South America; 17, *ferrulatum*, Linn. Sp. Pl. 1557.

Sect. 5. *Frond three-branched, digitate, or pedate; the branches pinnate.* Seven fpecies.

18, A. *ternatum*, Willd., found near Caripe, in South America, by Humboldt and Bonpland; 19, *radiatum*, Linn. Sp. Pl. 1556; 20, *pedatum*, ibid. 1557, fee our former article; 21, *Lindfæa*, Cavan. Leccion. 271, gathered by Louis Née, at Quito; 22, *patens*, Willd., found by Bredemeyer at the Caraccas; 23, *pubefcens*, Willd., which is *pedatum* of Forft. Prodr. 83; 24, *flabellulatum*, Linn. Sp. Pl. 1557. This laft is unqueftionably *A. fufcum*, Retz. Obf. fafc. 2. 28. t. 5, the figure of which precifely anfwers to the Linnæan fpecimen of *flabellulatum*, except that the upper fides of the *branches* in the latter are clothed with fine fhort rufty down, like velvet, which might efcape the notice of profeffor Retzius. The *common ftalk*, except at the very top, is quite fmooth and naked, as defcribed by him.

Sect. 6. *Frond twice, thrice, or four times, pinnate.* Thirty fpecies.

25, A. *Lancea*, Linn. Sp. Pl. 1557; 26, *ftriatum*, Sw. Ind. Occ. 1717. Jacq. Ic. Rar. t. 646; 27, *tetraphyllum*, Willd., found by Humboldt and Bonpland near Caripe; 28, *politum*, Willdenow, found by the fame at Cumana; 29, *pyramidale*, Willd., which is *Polypodium pyramidale*, Linn. Sp. Pl. 1554. This is *Filix ramofa pyramidalis, pinnis parvis*, Petiv. Fil. n. 40. t. 4. f. 12, not f. 2. Linnæus adopted this fpecies entirely from Petiver's figure, and was thus led to make it a *Polypodium*. But that figure is copied from *Lonchitis ramofa tenuis, pediculis fpinofis*, Plum. Fil. 42. t. 54, where the characters and habit of an *Adiantum* are confpicuous; 30, *melanoleucum*, Willd., adopted by this author, without feeing a fpecimen, from *Adiantum lunulis albicantibus fignatum*, Plum. Fil. 79. t. 96; 31, *criftatum*, Linn. Sp. Pl. 1558; 32, *nervofum*, Swartz Syn. 123. (fee *hifpidulum*, Br. n. 2, at the end of this fection); 33, *hifpidulum*, Swartz Syn. 124 and 321, fufpected by Mr. Brown to be the fame as n. 32; 34, *villofum*, Linn. Sp. Pl. 1558; 35, *monoforatum*, Willd., gathered at the Caraccas by Bredemeyer; 36, *ferrato-dentatum*, Willd., found by Humboldt and Bonpland near Caripe, and in Brafil; 37, *crenatum*, Willd., taken up entirely from *Lonchitis ramofa, rotundè crenata*, Plum. Fil. 41. t. 53; 38, *pulverulentum*, Linn. Sp. Pl. 1559; 39, *umbrofum*, Willd., found by Bredemeyer, in fhady fituations at the Caraccas; 40, *trapeziforme*, Linn. Sp. Pl. 1559, a Weft Indian fern, ftrangely fuppofed to grow in Scotland, becaufe Sibbald's rude figure of a variety of *Afplenium marinum* was taken for it; fee Sm. Fl. Brit. 1128; 41, *pentadactylon*, Langfdorff and Fifcher, Ic. Fil. t. 25, found in Brafil; 42, *affine*, Willd., which is *trapeziforme* of Forft. Prodr. 84. "Schkuhr Crypt. t. 121. b;" 43, *Capillus Veneris*, Linn. Sp. Pl. 1558. Fl. Brit. 1138. Engl. Bot. t. 1564, fee our former article; 44, *emarginatum*, Willd., found by Bory de St. Vincent, on rocky margins of torrents in the ifle of Bourbon; 45, *cuneatum*, Langfdorff and Fifcher, Ic. Fil. t. 26, found in Brafil; 46, *tenerum*, Swartz Ind. Occ. 1719; 47, *fragile*, ibid. 1721; 48, *concinnum*, Willd., which is *tenerum*, Schkuhr Cryt. t. 121, (but not of other authors,) gathered by Humboldt and Bonpland in the Caraccas; 49, *fumarioides*, Willd., communicated by Flügge, from the ifle of Bourbon; 50, *æthiopicum*, Linn. Sp. Pl. 1560; 51, *trigonum*, Labill. Nov. Holl. v. 2. 99. t. 248. f. 2, confidered by Mr. Brown as not different from the following; 52, *affimile*, Swartz Syn. 125 and 322. t. 3. f. 4; 53, *pallens*, Swartz Syn. 125 and 323, figured in Pluk. Phyt. t. 403. f. 2; 54, *polyphyllum*, Willd., found at the Caraccas by Bredemeyer. We fubjoin the following.

A. *hifpidulum.* Roughifh New Holland Maidenhair. Br. n. 2. Swartz Syn. 124? See n. 33, above. (A. nervofum; Swartz Syn. 123? See n. 32, above. A. pedatum; Forft. Prodr. 83, on the authority of his herbarium.)—Frond doubly pinnate; loweft branches divided; leaflets ovate-rhomboid, toothed in front, ftriated, rather hairy, and rough. Involucrum nearly orbicular, hairy. Common ftalk and ribs rough.—Gathered by Dr. White, as well as by Mr. Brown, in New South Wales, and by the latter in the tropical part of New Holland. A foot high, or more, with a ftrong tufted *root*, whofe crown is fcaly. *Stalks* purplifh-black, harfh. *Leaflets* fomewhat ftalked, ſtalked, numerous on each long partial *branch*, crowded, oblique, jagged, half an inch in length, of a fine green. *Involucrums* crowded moſt about the inner, or upper, angle of the baſe, brown, round or kidney-ſhaped, rough with fine briſtly hairs; their under ſide covered with little brown crowded *capſules*, which are quite unconnected with the leaf.

A. *formoſum*. Elegant New Holland Maidenhair. Br. n. 3.—" Frond repeatedly compound, deltoid; branches triply pinnate; leaflets rhomboid, obtuſe, ſmooth; the lower ones cut. Involucrum kidney-ſhaped. Partial ribs downy. Common ſtalk rough."—Diſcovered by Mr. Brown, near Port Jackſon, New South Wales. We know not that we have ever ſeen a ſpecimen.

A. *aſſimile*. Rounded New Holland Maidenhair. Br. n. 4. Swartz Syn. 125 and 322. t. 3. f. 4. (A. trigonum; Labill. Nov. Holl. v. 2. 99. t. 248. f. 2; ſee n. 51 and 52 above.)—Frond repeatedly compound, very ſmooth; leaflets roundiſh-rhomboid, deeply notched in front; the notches contracted, each bearing a ſmooth kidney-ſhaped involucrum. Common ſtalk and ribs perfectly ſmooth.—Gathered by Dr. White and Mr. Brown, in the neighbourhood of Port Jackſon, and by the latter, as well as M. Labillardiere, on the ſouth coaſt of New Holland, and in Van Diemen's iſland. From one to two feet high, compoſed of numerous little, fan-like, ſtalked, ribbed, bright-green *leaflets*, between whoſe rounded marginal ſegments the ſmooth, light-brown *involucrums* are ſtationed. Theſe by age become reflexed, and turn up the numerous pale *capſules* which cover their under ſurface.

A. *ſubcordatum*. Heart-leaved Maidenhair. Swartz in Stockh. Tranſ. for 1817. 75.—" Frond triply pinnate; leaflets ſtalked, ſomewhat heart-ſhaped, pointed, ſlightly crenate, with radiating veins. Involucrums at each margin, roundiſh-creſcent-ſhaped."—Gathered by Mr. Freyreis, in ſhady woods in Braſil. *Common ſtalk* round, dark purple, ſmooth and poliſhed. *Frond* eighteen inches long, its outline ovate, or deltoid. Primary and ſecondary *branches* alternate, widely ſpreading, ſtraight, round, ſmooth, the colour of the ſtalk. *Leaflets* alternate, rather diſtant, ſome regular, others oblique and dilated at the upper angle of the baſe, an inch in length, with a long point to each; ſmooth on both ſides; ſtreaked beneath with copious, forked, radiating veins, and ſlightly glaucous; the margin obſcurely ſerrated. *Common rib* ſlightly zigzag, poliſhed. *Dots* at the upper and under edges, not at the baſe or apex, roundiſh, diſtinct, covered by brown creſcent-ſhaped *involucrums*. *Swartz*. This mode of expreſſion muſt not be taken literally, for then the plant would be a *Cheilanthes*. The author adds, that this ſpecies is very diſtinct in the ſhape of its *leaflets*; for ſo only can we underſtand "*forma pinnarum*," as meaning *pinnularum*.

A. *intermedium*. Intermediate Maidenhair. Swartz in Stockh. Tranſ. for 1817. 76.—" Frond doubly pinnate; leaflets halved, wedge-ſhaped, oblong-rhomboid, obtuſe, ribbed and ſtriated; with a right angle at the upper ſide of the baſe; ſerrated and fructifying at the front and apex. Stalk and ribs rough and downy."—Gathered by Mr. Freyreis in low woods, in the interior part of Braſil, in September. *Root* creeping. *Common ſtalks* a foot high, triangular, rigid, roughiſh, browniſh-black, beſet with ruſty hair. *Fronds* half as long, deltoid: firſt diviſions oppoſite, linear-lanceolate, curved upwards, of three pair of *leaflets*, half an inch in length, beſides an odd one rather longer, all ſomewhat ſtalked, ſlightly falcate, obtuſe, crowded, ſmooth on both ſides, of a browniſh-green. *Dots* four or five, diſtinct, each with a ſemicircular, curved, brown *involucrum*. Intermediate, as it were, between *criſtatum* of Linnæus, and *nervoſum* of Swartz, n. 31 and 32, but differing from the former in having the *common ſtalk* not rough with prominent points, nor the lower *branches* deeply divided; from the latter in having wedge-ſhaped *leaflets*, ſomewhat falcate in front, and other particulars. It is perhaps too nearly related to *A. acuminatum* of Deveaux. *Swartz*.

ADJIDSING. See BUNDELA and REWAH.

ADIPOCIRE, in *Chemiſtry*, is deſcribed at length in the Cyclopædia; but the curious fact that this ſubſtance forms a principal ingredient in ſome ſpecies of BILIARY *Calculi* has been omitted under both articles.

ADJUSTMENT, the ſettling of the averages or loſſes on policies of aſſurance. See AVERAGE.

ADONIS, in *Botany*, was ſo named in memory of the favourite of Venus, reported by the poets to have been changed, by that goddeſs, into a flower. But whether ours is the very plant, known by this name to the ancients, would be almoſt as difficult to prove as the original fact. Our former article requires correction, in conſequence of the publication of De Candolle, by which we have profited ſo much in ACONITUM, ACTÆA, &c.—De Cand. Syſt. v. 1. 220. Linn. Gen. 281. Schreb. 377. Willd. Sp. Pl. v. 2. 1303. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 586. Prodr. Fl. Græc. Sibth. v. 1. 379. Ait. Hort. Kew. v. 3. 350. Juſſ. 232. Lamarck Illuſtr. t. 498. Gærtn. t. 74.—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Cand.

Gen. Ch. *Cal.* Perianth inferior, of five obtuſe, concave, cloſe-preſſed, ſomewhat coloured, deciduous leaves, ſometimes with a ſmall ſpur at the baſe. *Cor.* Petals from five to fifteen, oblong, obtuſe, poliſhed, with ſimple naked claws. *Stam.* Filaments numerous, very ſhort, awl-ſhaped, inſerted into the baſe of the receptacle; anthers oblong, inflexed. *Piſt.* Germens numerous, ovate, inſerted into the oblong-conical receptacle, crowded, above the ſtamens, each pointed with a very ſhort, partly decurrent, ſtyle; ſtigmas acute, reflexed. *Peric.* none. *Recept.* oblong, ſpiked. *Seeds* numerous, irregular, angular; gibbous at the baſe; reflexed at the point, rather prominent, without awn or wing.

Eſſ. Ch. Calyx of five leaves. Petals from five to fifteen, deſtitute of nectaries. Seeds naked.

Herbaceous plants, with leafy *ſtems*. *Leaves* deeply cut, in a pinnate manner, their lobes many-cleft, in very numerous, linear ſegments. *Involucrum* none. *Flowers* ſolitary, at the ſummits of the ſtem, or branches, yellow, ſcarlet or crimſon, never blue.

All the ten ſpecies are found in Europe, or in the adjoining countries of northern Africa and Aſia; thoſe of the firſt ſection in cultivated plains; of the ſecond in rugged mountainous ſpots.

The perennial kinds have acrid, bitteriſh, purgative *roots*, capable of ſupplying the place of Hellebore. The annual ones are almoſt inactive.

The genus is diviſible into two ſections, by the habit and duration, confirmed by differences in the *flowers* and *fruit*, as follows.

Sect. 1. *Adonia*. De Candolle.

Adonis of C. Bauh. Pin. 178.

Petals from five to ten, concave or flat. *Stam.* eighteen or twenty. *Seeds* collected into an ovate or cylindrical ſpike, always ſmooth, each beaked with a ſtraight conical ſtyle. *Roots* pale, annual, tapering, but little divided. All theſe annual ones are ſo nearly akin, that they have been taken by ſeveral

ſeveral authors, perhaps not improperly, for varieties of one ſpecies. The following ſynonyms therefore are equally applicable to all of them.

Adonis. Matth. Valgr. v. 2. 257.

Flos Adonis, aliis Eranthemum. Bauh. Hiſt. v. 3. p. 1. 125, 126.

Adonis radice anna. Linn. Hort. Cliff. 231, not 321. Sauv. Monſp. 253.

A. annua. Lamarck Dict. v. 1. 45. Brot. Luſit. v. 2. 376.

A. n. 1158. Hall. Hiſt. v. 2. 66.

The following plants may, in M. De Candolle's opinion, be eſteemed, with equal propriety, either ſpecies or varieties. He therefore propoſes them with heſitation, recommending them to the obſervation of practical botaniſts. Whatever difficulties may attend ſome of theſe, we are perſuaded that they cannot all be united, even though the *autumnalis* and *æſtivalis* ſhould prove the only two that are permanently diſtinct, and the foundations of all the reſt.

1. A. *autumnalis.* Corn Adonis, or Pheaſant's-eye. Linn. Sp. Pl. 771. De Cand. n. 1. Willd. n. 2. Sm. Prodr. Fl. Græc. Sibth. n. 1263. Fl. Brit. n. 1. Engl. Bot. t. 308. Curt. Lond. faſc. 2. t. 37. (Flos Adonis; Cluſ. Hiſt. v. 1. 336. Raii Syn. 251. Park. Parad. 293. f. 5. Ger. Em. 387. Lob. Ic. 283. Adonis; Camer. Epit. 647. A. hortenſis, flore minore atrorubente; Moriſ. ſect. 6. t. 8. f. 1. Eranthemum flore rubro; Beſl. Eyſt. æſtiv. ord. 5. t. 11. f. 2.)—Calyx ſmooth. Petals concave, converging, ſcarcely larger than the calyx. Seeds ſomewhat reticulated, collected into an ovate head. Stem branched.—Native of corn-fields in various parts of Europe, from Germany to Greece, flowering through the ſummer to the end of autumn; not frequent in England, except in gardens, where it is often cultivated amongſt other hardy annuals, and as De Candolle obſerves, preſerves itſelf unaltered from ſeed. The *root* is ſomewhat ſpindle-ſhaped. *Stem* branched, buſhy, round, ſtriated, occaſionally downy. *Leaves* alternate, dark green, thrice compound, with innumerable, crowded, rather ſhort ſegments. *Calyx* pale green; ſometimes purpliſh. *Corolla* of that peculiar intenſe crimſon, or blood-colour, which gave occaſion to the name of Pheaſant's-eye, and probably to the original application of the fable to this very plant, whoſe beauty well merits the compliment. Each *petal* has a violet-coloured baſe. *Petals* inverſely heart-ſhaped, uſually about eight. *Fruit* ovate-oblong, meaſuring hardly an inch. *Calyx-leaves* gibbous below their inſertion. M. De Candolle remarks, that there is occaſionally, though rarely, a paler variety. This ſeems, by Dr. Withering's ſpecimens, to be what he found on Saliſbury plain, and took for *æſtivalis.* Its *petals* are rounded, and do not extend beyond the *calyx.*

2. A. *flava.* Yellow Field Adonis. Villars Cat. Straſb. 247. De Cand. n. 2. (A. flore pallido; Camer. Epit. 648. "A. ſylveſtris, flore citrino; Tabern. Ic. t. 790." A. ſylveſtris, flore luteo, foliis longioribus; Mill. Ic. t. 14. f. 2? *De Cand.*)—Calyx ſmooth, with ſhort ſpurs. Petals flat, oblong, twice the length of the calyx. Seeds nearly ſmooth, collected into an oblong head. Stem ſcarcely branched.—Common in corn-fields and vineyards in every part of France, and apparently in Germany alſo, flowering in June and July. The *ſtem* is almoſt always quite ſimple. *Flowers* yellow, or lemon-coloured, rarely pale orange. *Calyx-leaves* elongated and unattached at the baſe, almoſt as in *Sedum* and *Myoſurus.* *Petals* flat, nearly linear. The *flowers* generally almoſt rival the ſize of *A. vernalis,* but there is a variety only half as large; they run into each other. *De Candolle.*

3. A. *micrantha.* Small-flowered Adonis. De Cand. n. 3.—Calyx ſmooth; not ſpurred at the baſe. Petals flat, oblong, rather longer than the calyx. Seeds ſomewhat reticulated, collected into an ovate head. Stem ſomewhat branched.—Found in the ſouth of France, in fields about Toulouſe, Avignon, &c., flowering in May and June. A doubtful ſpecies. *Flower* ſmall, yellow, or flame-coloured. *Germens* few, from ſeven to ten, compoſing a very ſhort head. *Stem* ſimple at the baſe, but often a little branched at the ſummit. *De Candolle.*

4. A. *microcarpa.* Small-fruited Adonis. De Cand. n. 4. (A. annua, flore minimo, ſpicâ tenui longiſſimâ; Moriſ. ſect. 6. t. 9. f. 4?)—Calyx ſmooth. Petals flat, oblong, twice the length of the calyx. Seeds reticulated, collected into an oblong head. Stem nearly ſimple.—Native of corn-fields in Spain, near Tudela; *Dufour:* in the iſle of Ivica; *Delaroche:* in Teneriffe; *Brouſſonet.* Perhaps not diſtinct from *flava,* n. 2. It appears to differ in the *ſtem* not being half ſo tall, with more crowded *foliage.* The *calyx* is ſcarcely, or not at all, ſpurred at the baſe. *Seeds* about half the ſize of *flava,* more numerous, and much more reticulated, in a head eight or nine lines long. The *corolla* is either of a lemon-yellow, or ſomewhat flame-coloured. *De Candolle.* We take the liberty of introducing Moriſon's ſynonym, which ſeems to anſwer beſt to this ſpecies, though applied by De Candolle to the ſeventh.

5. A. *citrina.* Lemon-coloured Adonis. Hoffm. Germ. v. 1. 251, under n. 1. De Cand. n. 5. (Ranunculus arvenſis, foliis chamæmeli, flore minore luteo; Tourn. Inſt. 291? *De Cand.*)—Calyx hairy at the baſe. Petals flat, oblong, longer than the calyx. Seeds collected into an ovate-oblong head. Stem nearly ſimple. Flower almoſt ſeſſile among the leaves.—Native of corn-fields in France, Germany, Teneriffe, &c. A ſmall plant, with an erect, moſtly ſimple, *ſtem,* and little yellow ſolitary *flowers.* Baſe of the *calyx* rough with hairs. Perhaps the ſynonyms may rather belong to *microcarpa,* or to *micrantha.* *De Candolle.*

6. A. *flammea.* Flame-coloured Adonis. Jacq. Auſtr. t. 355. De Cand. n. 6. Willd. n. 3. Ait. n. 3. Hoſt. Syn. 308. Hoffm. Germ. v. 1. 251. (Eranthemum flore flammeo; Beſl. Eyſt. æſtiv. ord. 5. t. 11. f. 3?)—Calyx hairy at the baſe. Petals flat, oblong, ſomewhat acute, longer than the calyx. Seeds collected into a cylindrical head. Stem branched. Flowers ſtalked.—Native of corn-fields in Auſtria, flowering in ſummer; *Jacquin.* In Brunſwick; *Hoffmann.* The *ſtem* is two feet or more in height, branched from the bottom all the way up, furrowed, ſmooth or hairy. *Footſtalks* hairy. *Leaves* light-green, with lanceolate ſegments. *Flowers* large, on long ſtalks. *Calyx* acute, jagged, reddiſh. *Petals* eight or nine lines in length, ſomewhat obovate, but more or leſs acute, and frequently toothed; their colour orange-ſcarlet.

7. A. *æſtivalis.* Tall Scarlet Adonis. Linn. Sp. Pl. 771. De Cand. n. 7. Sm. Fl. Brit. 587, note. Tour on the Continent ed. 2. v. 3. 16. Prodr. Fl. Græc. Sibth. n. 1262. (A. miniata; Jacq. Auſtr. t. 354. Hoffm. Germ. v. 1. 251. A. annua, flore majore phœniceo; Moriſ. ſect. 6. t. 9. f. 3. A. ſylveſtris, flore phœniceo; Bauh. Pin. 178. Anemone tenuifolia; Cord. Annot. 151, good.)—Calyx hairy at the baſe. Petals flat, oblong, obtuſe, twice the length of the calyx. Seeds reticulated, collected into a long cylindrical ſpike. Stem ſlightly branched. Abundant in corn-fields of the ſouth of Europe, France, Italy, &c.; frequent in Greece, according to Dr. Sibthorp, who from that circumſtance, and its coincidence with a figure in the famous old manuſcript copy of Dioſcorides, at Vienna, was led to conſider this ſpecies as the ἀργεμώνη of that ancient botaniſt.

This

This *Adonis* is one of the talleſt, with a copiouſly-branched, furrowed *ſtem;* light-green *leaves;* and long-ſtalked *flowers*, which we cannot, with De Candolle, term ſmall ones, being, as far as we have ſeen, of the full ſize of any annual ſpecies of its genus. The *petals* are uſually numerous, of a moſt vivid ſcarlet. *Fruit* long, but not interrupted, except by accident. We cannot but conſider our friend M. De Candolle as having cited Moriſon, on the preſent occaſion, with leſs accuracy than uſual, and we have made an alteration herein; ſee ſpecies 4th.

8. A. *dentata*. Toothed-ſeeded Adonis. "Delile Egypt. 17. Deſcr. t. 53. f. 1." De Cand. n. 8.—"Calyx hairy at the baſe. Petals flat, oval-oblong, rather longer than the calyx. Seeds reticulated; tuberculated and toothed at the baſe; diſpoſed in a long uninterrupted ſpike."—Native of corn-fields and barren ground, in Egypt and Cyprus; as well as in Provence, between Digne and Colmars. The *ſtem* is angular and ſtriated, firm, branched. *Flowers* on ſhort ſtalks. In the Egyptian ſpecimens, the *petals* are oval, yellow, with blackiſh claws; *ſeeds* furniſhed at the baſe with tooth-like prickles, finely corrugated, leſs creſted at the back, and diſpoſed in a ſlender ſpike. In the Provence variety, the *petals* are oblong, and flame-coloured; *ſeeds* leſs toothed or tuberculated at the baſe, more crowded, lying over each other with their creſts, ſo as to form a continued ſpike an inch long. *De Candolle.*

Sect. 2. *Conſiligo*. Matthioli, De Candolle.

Petals from eight to fifteen, always oblong, flat. *Stamens* from 25 to 30. *Seeds*, collected into an ovate head, each ovate, beaked with its hooked recurved ſtyle. *Roots* perennial, thick at the crown, blackiſh, with cluſtered fibres.

9. A. *vernalis*. Spring Adonis. Linn. Sp. Pl. 771. De Cand. n. 9. Willd. n. 4. Ait. n. 4. Curt. Mag. t. 134. Lamarck f. 3. (A. apennina; Jac. Auſtr. t. 44. Elleborus niger verus; Trag. Hiſt. 406, not 206. Helleborinum; Cord. Annot. 93. Helleborus niger ferulaceus; Lob. Ic. 784. Park Parad. 291. f. 6. Ger. Em. 746.)

β. Mentzelii; De Cand. excluding the ſyn. of Linnæus. (Helleborus niger ferulaceus, caule geniculato, flore magno, tulipæ minoris inſtar; Mentz. Pugill. t. 3; copied in Moriſ. ſect. 6. t. 9. f. 2.)

γ. Sibirica, *Patrin;* De Cand. (A. n. 43; Gmel. Sib. v. 4. 200.)

Root ſomewhat tuberous. Stem branched from the bottom. Petals ten, fifteen, or more, elliptic-lanceolate. Calyx downy. Seeds hairy.—Native of mountainous or alpine ſituations, or open hills, in the iſle of Oeland, Germany, the ſouth of France, Switzerland, and Italy. Frequent with us in gardens, flowering in the early ſpring. The tuberous crown of the black perennial *root*, ſends down many long, ſimple, rather ſtout fibres. The *ſtems* are herbaceous, a foot high, ſtriated, leafy, more or leſs branched from the lower part, in an alternate order, rarely beſprinkled with a few looſe ſcattered hairs. *Leaves* crowded, ſeſſile, alternate, ſmooth, in many three-cleft, linear, acute, entire ſegments; channelled above. *Flowers* terminal, ſolitary, nearly ſeſſile, large and handſome, an inch and a half or two inches broad, of a bright ſhining yellow. *Calyx-leaves* concave, ovate, downy, ſtriated. *Petals* twice as long, ſometimes above an inch, uſually ten or twelve, but ſometimes, even in a wild ſtate, above twenty; purpliſh beneath; varying in breadth, but always ſomewhat elliptical, either obtuſe or acute, a little crenate. *Stamens* numerous, capillary, ſhort, with vertical quadrangular *anthers*. *Germens* numerous, ovate, compreſſed, more or leſs covered with ſhort ſoft hairs, and hooked with the recurved *ſtyles*, collected into a globular head, the *ſtalk* much elongated as the *fruit* ripens. We readily follow De Candolle in thinking the plant of Mentzelius, (ſee *β*.) a very inconſiderable variety, differing only in having ſhort and ſimple *ſtems*, with larger *flowers:* but Linnæus has ſurely committed a great error in referring this plant to his *apennina*. The *γ* of De Candolle is ſaid to have likewiſe a large flower.

10. A. *apennina*. Apennine Adonis. Linn. Sp. Pl. ed. 1. 548, excluding Mentzelius's ſynonym, ed. 2. 772. Willd. n. 5.—Root ſomewhat tuberous. Stem branched at the top. Petals fifteen, obovate. Calyx ſmooth. Seeds fringed.—Native of Siberia and the Apennines, according to Linnæus, who cultivated this plant at Upſal, as appears by the original ſpecimen in his herbarium. He always conſidered this ſpecies as very near the laſt, and has been unuſually preciſe in marking their differences. The *ſtem* of the preſent is fifteen or eighteen inches high, with ſeveral branches about the upper part, not from the lower. *Segments* of the *leaves* more numerous, lanceolate, and ſhining. *Calyx* yellowiſh, ſmooth, flat, without veins. *Petals* obovate, imbricated, generally more numerous. *Stamens* much reflexed. The *germens* ſeem to be fringed only, not all over downy. Linnæus concludes by obſerving that the former is entirely a vernal plant, as we find it; but the preſent laſts far into the ſummer. Neverthelefs our intelligent friend M. De Candolle, who never ſaw this ſpecies but in the Linnæan collection, was induced, probably by the ſynonym of Mentzelius, which cannot be the ſame, to reduce it to *vernalis*. We find more difficulty in underſtanding the two following.

11. A. *volgenſis*. Wolga Adonis. De Cand. n. 9. *addend. 545. ("A. apennina; Pallas Nov. Act. Petrop. v. 10." *Steven*, who ſent ſpecimens to De Candolle.)—"Radical and lower ſtem-leaves reduced to ſlightly ſheathing ſcales; middle and uppermoſt leaves ſeſſile. Seeds ſomewhat downy. Calyx externally hairy. Petals ten or twelve, oblong."—Gathered by Mr. Steven, near the banks of the Wolga. Perennial. Intermediate between *vernalis* and *pyrenaica*, differing from the former in having a branched *ſtem*, more diſtant *leaves*, often wanting on the lower part of the *branches*, and much leſs downy *ſeeds*. From the latter it is diſtinguiſhed by having its lower *leaves* abortive, like ſcales, and the *ſeeds*, at leaſt while young, ſomewhat downy. From both it differs in the *calyx* being externally downy or finely hairy, not ſmooth. Mr. Steven met with *A. vernalis* likewiſe in Tauris. *De Candolle.* Theſe remarks of our learned friend cauſe us no ſmall perplexity. All our ſpecimens of *A. vernalis*, from Switzerland and the ſouth of France, as well as the authentic Linnæan ſpecimen, and one from profeſſor Jacquin, have a downy *calyx*, and moſt of them branched *ſtems*. The half-ripe *ſeeds* in Jacquin's plant are ſparingly downy all over; the *germens* of thoſe from Switzerland ſcarcely downy at all.

12. A. *pyrenaica*. Pyrenean Adonis. De Cand. n. 10. "Fl. Franc. v. 5. 635." (A. apennina; Gouan Illuſtr. 33.)—"Radical leaves on long ſtalks, ternate; leaflets in many deep ſegments: upper leaves ſeſſile. Fruit ſmooth. Petals eight or ten, oblong-wedgeſhaped, undivided."—Found by Gouan in the valley of Eynes, in the eaſtern Pyrenees, flowering in July. The other places of growth, mentioned by De Candolle, are all beſt omitted. He directs us in his *Addenda* to ſtrike out the reference to Pallas, as belonging to *A. volgenſis;* and perhaps alſo that of Fiſcher, *A. chærophylla*. To the latter alteration we heartily aſſent. Dr. Fiſcher's own ſpecimen, ſeen in our hands by De Candolle,

Candolle, has nothing but ſcales in the place of radical *leaves*, and certainly agrees in every reſpect with Jacquin's ſpecimen of *vernalis* above-mentioned. The *calyx* is in the ſame manner hairy at the baſe only, a circumſtance, indeed, on which, the more we enquire into it, the leſs we find reaſon to rely. Our ſpecimen will not admit of an examination of the *germens*. M. De Candolle ſpeaks of his *pyrenaica*, (a ſpecies entirely unknown to us,) as "akin to *vernalis*, but moſt certainly diſtinct. The *ſtem* is often above a foot high, and branched. *Radical leaves* on long three-cleft *footſtalks*. *Flower* nearly ſeſſile, at its firſt expanſion among the uppermoſt leaves. Head of *ſeeds* raiſed on a greatly elongated ſtalk. *Petals* eight to ten, ſmaller and more obtuſe than in *A. vernalis*. *Fruit*, even before it is ripe, ſmooth."

We do not preſume to form any deciſive opinion concerning the perennial ſpecies of *Adonis*, without the examination of ſufficiently perfect ſpecimens, in every ſtate of growth; but it appears to us that they are by no means well determined at preſent, nor do we perceive that any characters hitherto ſuggeſted are ſufficient for the purpoſe. The *vernalis* and *pyrenaica* are probably very diſtinct, for which we have the weighty opinion of De Candolle; but whether the latter may not be found in many other countries, and confounded by the generality of botaniſts with *vernalis*, is a point we cannot ſatisfactorily determine.

ADPRESSA Folia, Cloſe-preſſed Leaves, are ſuch as have the upper ſurface cloſely applied to the ſtem, or branch, on which they grow. This is ſo complete in ſome plants, ſuch as *Paſſerina hirſuta*, that only the under ſurface of each leaf being expoſed to the air and light, the latter part appears to perform the functions proper to the upper ſurface of moſt leaves, and, in the inſtance juſt mentioned, aſſumes the deep green hue, and poliſhed cuticle, uſual on the upper ſide of leaves in general. Such is likewiſe the caſe with *Xeranthemum proliferum* and *ſeſamoides* of Linnæus, now referred to Elichrysum. See Leaf.

ADRASTÆA, ſo named by profeſſor De Candolle, from Adraſtea or Adraſtia, a ſurname of the goddeſs Nemeſis, who was a daughter of Oceanus; becauſe the plant in queſtion is a native of New Holland, which has been called by ſome perſons *Oceania*.—De Cand. Syſt. v. 1. 424.—Claſs and order, *Decandria Digynia*. Nat. Ord. *Magnoliæ*, Juſſ. *Dilleniaceæ*, De Cand.

Eſſ. Ch. Calyx inferior, of five permanent pointed leaves. Petals five, oval, ſhorter than the calyx. Filaments flat. Anthers linear, of two cells burſting lengthwiſe. Germens two, globoſe. Styles ſtraight, cloſe together, awl-ſhaped; conical at the baſe. Capſules membranous, of one cell. *Seeds* ſolitary?

1. A. *ſalicifolia*. Willow-leaved Adraſtæa.—Native of bogs in New South Wales. Deſcribed by De Candolle from a dried ſpecimen in Mr. Lambert's collection. This is a ſmall ſhrub, approaching Hibbertia, (ſee that article,) in general appearance. The *branches* are round, long and ſlender, reddiſh-brown; downy when very young, but caſting their cuticle in long portions when old. *Leaves* linear, entire, except three or five callous teeth at the extremity, the point being callous; their baſe ſomewhat contracted; their upper furface ſmooth, without veins; the under hoary with ſhort ſilky hairs: their length is an inch and a half; breadth three lines; and they reſemble the leaves of *Salix alba*, or of the Olive. *Flowers* at the ends of the young branches, ſolitary or in pairs, ſeſſile between three or four crowded leaves, which exceed them in length. *Calyx-leaves* keeled, covered with cloſe ſilky hairs; their margin membranous; their point tipped with a briſtle. *Stamens* ten, half the length of the calyx. *Germens* ſmooth.

ADRIANOPLE, col. 2, l. 3, *r.* 1453.

ADVICE, in *Commerce*, denotes the information given by *letter* of a bill drawn by one merchant upon another.

ADVOCATE, l. 24, *r.* paſſed A.U. 549. Col. 2, l. 8, *r.* revived.

AECIDIUM, in *Botany*, from αικια, *a wound or injury*, becauſe the parts of a plant to which this genus of paraſitical *fungi* attaches itſelf, always, in conſequence, become diſeaſed, diſcoloured, and either tumid, or, as it were, blaſted.—Perſ. Obſ. Mycol. faſc. 1. 97. Syn. Fung. 204. —Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Head conſpicuous, ſeſſile, round, membranous, at length burſting, with a toothed orifice. Seeds mealy, naked.

This genus is always paraſitical on the backs of the leaves, or on the ſtem, of certain plants. In addition to what is ſaid of it already, we ſhall ſubjoin illuſtrations of a few ſpecies. Perſoon defines twenty, in two ſections.

Sect. 1. *Aggregate*. *Heads aſſembled in patches, forming blotches on various leaves*. Fourteen ſpecies.

Ae. *cornutum*. Horned Aecidium. Perſ. n. 1. Obſ. Mycol. faſc. 2. 22. t. 4. f. 2, 3. Sowerb. Fung. t. 319. (Lycoperdon corniferum; Fl. Dan. t. 838. L. corniculatum; Ehrh. Crypt. 200.)—Baſe yellowiſh. Heads nearly cylindrical, very long, curved, greyiſh-olive.—Found in autumn, on the leaves of the Mountain Aſh. On the upper ſide of the leaf is ſeen an orange-coloured ſpot; on the under a ſwelling, out of which proceed ſix or ſeven briſtle-like *heads*, a line and a half in length; each rather tumid at the baſe; contracted at the point, where it burſts irregularly.

Ae. *cancellatum*. Reticulated Aecidium. Perſ. n. 2. Sowerb. Fung. t. 410. (Lycoperdon cancellatum; Jacq. Auſtr. v. 1. 13. t. 17. Fl. Dan. t. 704.)—Baſe tawny. Heads oblong, ſplitting into fibrous maſſes, cohering at the ſummit.—Not rare on the leaves of garden pear-trees. We firſt ſaw it on a baking pear at ſir A. Hume's, Wormleybury, many years ago, where it ſtill frequently occurs, without injury to the tree or fruit. The *heads* are much thicker and ſhorter than the foregoing, and when ripe, diſcharge their powdery *ſeeds* between the tough, browniſh, permanent fibres of the *head*, which laſt as long as the leaf, and actually ſeem an extenſion of its woody fibres. We cannot but conceive Mr. Sowerby's t. 409 to be a different plant, belonging to the genus Sphæria (ſee that article); or rather perhaps Næmaspora, to be hereafter deſcribed.

Ae. *oxyacanthæ*. White-thorn Æcidium. Perſ. n. 3. (Ae. laceratum; Sowerb. Fung. t. 318. Lycoperdon penicillatum; Fl. Dan. t. 839?)—Baſe unequal, ruſty. Heads aſh-coloured, cylindrical, ſplitting nearly from top to bottom, into numerous, fibrous, ſpreading ſegments.—Found on the leaves, or young buds, of Common Hawthorn. Perſoon deſcribes his ſpecimens as divided to the very baſe, and therefore preſumes the plant of *Fl. Dan.*, which appears not ſplit half way down, may be another ſpecies; but Mr. Sowerby's ſeems intermediate between both, and we can ſcarcely doubt his being the ſame as Perſoon's.

Ae. *tuſſilaginis*. Colt's-foot Æcidium. Perſ. n. 10. Relh. 546. Sowerb. Fung. t. 397. f. 1. (Lycoperdon epiphyllum; Linn. Sp. Pl. 1655. Fl. Suec. ed. 2. 459. With. v. 4. 383.)—Baſe tawny-purple. Heads ſunk, level-topped, with a many-cleft, reflexed border.—On the under ſide of the leaves of Colt's-foot and Butterbur, extremely common, in the form of broad orange-coloured ſpots, beſprinkled

ſprinkled with the little ſtarry whitiſh orifices of the *heads*, full of orange powder. *Lycoperdon epiphyllum* of Hudſon and Lightfoot are different from this, and perhaps from each other. *Uredo tuſſilaginis* reſembles our plant in general aſpect, but on near examination will be found leſs diſtinct, in the form of an orange powder, intermixed with the cotton of the Colt's-foot leaf, without diſtinct white ſtarry heads.

Ae. *berberidis*. Barberry Æcidium. Perſ. n. 11. Sowerb. Fung. t. 397. f. 5. (Lycoperdon poculiforme; Jacq. Coll. v. 1. 122. t. 4. f. 1.)—Baſe orbicular, ſcarcely convex. Heads cylindrical, ſomewhat elongated, yellow.—Found on leaves of the Barberry, in cold wet autumnal weather, ſometimes in the ſpring, conſiſting of very conſpicuous and prominent tawny ſpots, the *heads* projecting much. The orifice of each is neither dilated, nor conſpicuouſly toothed or jagged. The whole turns brown, or black, in decay, and may be obſerved in that ſtate on the fallen leaves during winter.

Sect. 2. *Simple. Heads ſcattered, not combined by any diſtinct cruſt, or baſe.* Six ſpecies.

Ae. *euphorbiæ*. Spurge Aecidium. Perſ. n. 15. "Humb. Friberg. 128." ("Lycoperdon euphorbiæ; Schrank. Bavar. v. 2. 631." Eſula degener; Rivin. Tetrap. Irr. t. 113. f. 2.)—Simple, crowded. Heads pale, cylindrical, reflexed at the margin. Powder orange-coloured.—Frequent in ſummer on the leaves of *Euphorbia Cypariſſias*, in Germany, France, and Switzerland, cauſing the whole plant to aſſume a diſeaſed appearance, and often to fail of producing flowers. We ſcarcely think Rivinus, as Perſoon hints, meant to conſider this diſeaſed *Euphorbia* as a diſtinct ſpecies.

Ae. *tragopogi*. Goat's-beard Æcidium. Perſ. n. 15, *b*. Sowerb. Fung. t. 397. f. 2.—Scattered. Heads ſomewhat elliptical, with an irregularly torn white margin. Powder yellow.—On the ſtem and leaves of *Tragopogon pratenſis*. Conſpicuous for its ſhort white heads. *Perſoon*. That author certainly means to deſcribe this as a diſtinct ſpecies from the laſt, though by an error, which ought to have been corrected in printing, he has given the ſame number to both. Hence he has really twenty ſpecies in all, though apparently but nineteen.

Ae. *anemones*. Wood-Anemone Æcidium. Perſ. n. 17. Uſt. Annal. v. 20. 135. (Lycoperdon anemones; Pulten. Tr. of Linn. Soc. v. 2. 311.)—Simple, ſcattered. Heads cylindrical, rather prominent, pale, moſtly toothed, filled entirely with white powder.—Found in the ſpring on leaves of *Anemone nemoroſa*, rendering the plant ſickly, and often barren. Dr. Pulteney obſerved that this *fungus* originates under the cuticle, and may be ſeen, in a young ſtate, through that membrane. At length each individual aſſumes a nearly globular form, burſting with lacerated edges, the cavity being lined with white powdery *ſeeds*, intermixed with minute fibres. In fading, each turns yellowiſh, then brown, and finally "each *fungus* is reſolved into a farinoſe particle, reſembling the fructification of a Polypody." *Pulteney*. The *Æ. fuſcum*, Relh. Cant. 546. Sowerb. Fung. t. 53, found on the leaves and petals of the ſame ſpecies of *Anemone*, without injuring the plant, is the *Puccinia anemones*, Perſ. Syn. Fung. 226, a genus deſcribed as deſtitute of a head, or *peridium*. In this reſpect we find it difficult to draw a line between Mr. Sowerby's figure, and his various repreſentations of *Æcidia*, t. 398, though we doubt not the ſpecific difference of the above two plants. Which of them is the "Conjurer of Chalgrave's Fern," Dill. in Raii Syn. 124. t. 3. f. 1, may be doubted; but we rather ſuppoſe the *Puccinia*.

Ae. *punctatum*. Yellow-Anemone Æcidium. Perſ. n. 18. Uſt. Annal. v. 20. 135. (Ae. anemones; Hoffm. Germ. v. 2. t. 11. f. 1.)—"Simple, ſcattered. Heads partly ſunk, their border nearly cloſed. Powder compact, browniſh."—Found rarely on the leaves of *Anemone ranunculoides*, which it marks with brown dots. The border of the orifice is but ſlightly, if at all, toothed. *Seeds* cheſnut-coloured. *Perſoon*. We have not heard of this ſpecies in Britain.

Mr. Sowerby has repreſented ſeveral more ſpecies of this genus in his *Engliſh Fungi*, t. 397, 398, ſuch as *Æ. corni, confluens, rubi, fragariæ, menthæ, ſalicis, cardui, rhei;* but we do not ſee clearly how the generic difference between *Æcidium* and *Puccinia* is, in moſt of them, to be determined.

ÆGÆ, l. 4, *r*. M. Gebelin.

AEGERITA, in *Botany*, ſo called from αιγειρος, *a Poplar*, or rather *Alder tree*, becauſe the firſt-diſcovered ſpecies of this minute genus grows on the wood of the Alder, and was thence called *Sclerotium Aegerita*, which laſt word, on the eſtabliſhment of the preſent genus, was taken for its generic name.—Perſ. Syn. Fung. 684.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Seſſile granulations ſolid, filled with a ſomewhat mealy powder.

1. Ae. *candida*. White Aegerita. Perſ. Diſp. Fung. 40. (Sclerotium Aegerita; Hoffm. Germ. v. 2. t. 9. f. 1.)—Crowded, ſmooth, pure white.—Found not unfrequently in autumn, on the dry rotten wood of Alder, in moiſt ſituations. This *fungus* conſiſts of numerous little crowded granulations, the ſize of millet-ſeed, globular or elliptical, as white as ſugar-plums, ſolid but friable, the internal ſubſtance appearing, when highly magnified, full of ſeed-like bodies. *Hoffmann*.

2. Ae. *pallida*. Pale Aegerita. Perſ. ibid.—Scattered, pale, ſomewhat warty.—On the fallen branches of Oaks. Diſtinguiſhed by the inequality of its ſurface. *Perſoon*.

3. Ae.? *cæſia*. Grey Doubtful Aegerita. Perſ. n. 3.—Scattered, glaucous or whitiſh.—On the trunks of trees in winter. Reſembles ſmall pale dots, of a ſoftiſh ſubſtance; diſappearing when dried. *Perſoon*.

AEGIALITIS, αιγιαλιτις, *an inhabitant of the coaſt*, alluding to its place of growth.—Brown Prodr. Nov. Holl. v. 1. 426.—Claſs and order, *Pentandria Pentagynia*. Nat. Ord. *Aggregatæ*, Linn. *Plumbagines*, Juſſ. *Plumbagineæ*, Brown.

Eſſ. Ch. Calyx of one leaf, coriaceous, five-toothed, with folded angles. Petals five, their claws combined at the baſe, bearing the ſtamens. Stigmas capitate. Pericarp prominent, angular, nearly cylindrical, coriaceous, without valves. Seed germinating, without albumen. Plumula conſpicuous.

1. Ae. *annulata*. Gathered by Mr. Brown, in the tropical part of New Holland, growing among *Rhizophoræ*, near the ſea-ſhore. A perfectly ſmooth *ſhrub*, of humble growth, having round, brittle *branches*, marked with annular ſcars, where the leaves have been. *Leaves* alternate, without *ſtipulas*, flat, coriaceous, ovate, entire; their *footſtalks* bordered, dilated and ſheathing at the baſe. *Spikes* panicled. *Flowers* white, alternate, ſomewhat imbricated, with three *bracteas*. *Brown*.

Akin to STATICE. See that article, and TAXANTHEMA.

AEGICERAS, ſo called from αιξ, *a goat*, and κερας, *a horn*, in alluſion to the horn-like ſhape of the curved ſeed-veſſel, the following is to be ſubſtituted in the place of our original article.—Gærtn. v. 1. 216. t. 46. Schreb. Gen. 156. Willd. Sp. Pl. v. 1. 1183. Mart. Mill. Dict. v. 1.

Konig Ann. of Bot. v. 1. 132. t. 3. Brown Prodr. Nov. Holl. v. 1. 534.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Myrſineæ*, Brown.

Gen. Ch. reformed. *Cal.* Perianth inferior, of five roundiſh-oblong, concave, coriaceous, permanent leaves, thickeſt at the baſe, obliquely imbricated at the margin. *Cor.* of one petal, ſalver-ſhaped, ſomewhat coriaceous.; tube the length of the calyx, nearly cylindrical, thickiſh, rounded at the baſe; limb the length of the tube, in five deep, ovate, pointed, equal, reflexed ſegments. *Stam.* Filaments five, prominent, awl-ſhaped, twice the length of the tube, united at the bottom into a ring, attached to the baſe of the corolla; anthers arrow-ſhaped, incumbent, verſatile, of two lobes and two cells, burſting longitudinally. *Piſt.* Germen ſuperior, linear-oblong, compreſſed, dotted, with rudiments of ſeveral ſeeds; ſtyle erect, the length of the ſtamens, tapering, permanent; ſtigma ſimple. *Peric.* Follicle cylindrical, coriaceous, curved, pointed, of one cell. *Seed* ſolitary, oblong, nearly filling the pericarp, and germinating there, attached by a thin flat umbilical cord, of its own length, which is dilated into a hood-like, pointed, partial tunic, cloſely covering the minute cotyledons, and part of the radicle; albumen none; embryo erect; radicle very large.

Eſſ. Ch. Calyx in five deep imbricated ſegments. Corolla ſalver-ſhaped, five-cleft, reflexed. Filaments joined at the baſe. Stigma ſimple. Follicle coriaceous, cylindrical. Seed ſolitary, with a hooded tunic.

1. Ae. *fragrans*. Fragrant Aegiceras. Konig as above. Br. n. 1. (Ae. majus; Gærtn. as above. Willd. n. 1. Rhizophora corniculata; Linn. Sp. Pl. 635. Burm. Ind. 108. Pou-Kandel; Rheede Hort. Malab. v. 6. 65. t. 36. Mangium fruticans corniculatum; Rumph. Amboin. v. 3. 117. t. 77.)—Native of the maritime woods and thickets of the Eaſt Indies, as well as of the tropical and eaſtern coaſts of New Holland. The *ſtems* are rather ſhrubby than arboreſcent, ſeveral from the ſame root, ten to fourteen feet high, three or four inches in diameter, with numerous ſlender ſpreading branches. *Leaves* alternate, or imperfectly oppoſite, ſtalked, obovate, or ſomewhat elliptical, emarginate, entire, coriaceous, ſmooth, ſingle-ribbed, from one to four inches long. They are reported to have a briny taſte; and Mr. Browne noticed a ſaline efflorefcence, or excretion, on their upper ſurface. *Flowers* white, fragrant, about half an inch broad before their *corolla* is reflexed, collected into *umbels* at the ends of the ſhort lateral, as well as principal, branches. *Seed-veſſel* near an inch and a half long, pointed, curved, but not ſpiral, as the generic name would ſeem to imply.

This ſhrub, which Linnæus confounded with his *Rhizophora*, is the only known ſpecies of a very diſtinct genus; the *Æ. minus*, Gærtn. t. 46, having been ſhewn by Mr. Konig to be *Connarus ſantaloides* of Vahl, Symb. v. 3. 87, *Santaloides*, Linn. Zeyl. 192. n. 408, a totally different plant in genus and natural order, though Gærtner has quoted for a ſynonym, *Umbraculum maris*, Rumph. Amboin. v. 3. 124. t. 82. This laſt, as well as *Mangium floridum* of the ſame writer, v. 3. 125. t. 83, appear very nearly related to our *Ægiceras fragrans*; inſomuch that, without ſpecimens, no one can ſafely diſtinguiſh them from it, or from each other, for the difference of ſize in their reſpective *flowers* is of no avail in Rumphius's, always variouſly diminiſhed, plates.

AEGINETIA, a reſtored genus, firſt founded by Linnæus, ſubſequently reduced by himſelf to OROBANCHE, and originally named in honour of PAUL ÆGINETA. (See thoſe articles.)—Linn. Gen. ed. 5. 280. Dryandr. in Roxb. Coromand. v. 1. 63. Willd. Sp. Pl. v. 3. 346.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Pediculares*, Juſſ.

Gen. Ch. *Cal.* Perianth ſheath-like, inferior, of one leaf, ovate, concave, inflated, coloured, permanent. *Cor.* of one petal, tubular, longer than the calyx; tube globular at the baſe, bent horizontally towards the middle, ſwelling upwards; limb ſpreading, in five ſhort, rounded, equal ſegments. *Stam.* Filaments four, incurved, two ſhorter than the reſt; anthers oblong, ſimple, converging in pairs, ſlightly bent. *Piſt.* Germen ſuperior, ovate; ſtyle ſimple, curved, the length and poſition of the ſtamens; ſtigma capitate, large. *Peric.* Capſule ovate, pointed, of two valves? with many cells. *Seeds* numerous, minute. *Receptacles* ſeveral, convoluted, attached to the valves.

Eſſ. Ch. Calyx of one leaf, opening lengthwiſe. Corolla with five equal ſegments. Capſule of many cells. Seeds numerous.

1. Ae. *indica*. Indian Aeginetia. Linn. Sp. Pl. v. 1. 632. Roxb. Coromand. v. 1. 63. t. 91. Willd. n. 1. (Orobanche Aeginetia; Linn. Sp. Pl. ed. 2. 883. "Tſiem-cumulu; Rheede Hort. Malab. v. 11. 97. t. 47.")—Native of Malabar, in the hilly parts of the Circars, but rare. *Roxburgh*. *Root* of many ſimple fibres, probably paraſitical and annual. *Stems* ſeveral, purpliſh, a ſpan high, ſimple, ſingle-flowered, and naked, except a lanceolate, brown, ſheathing ſcale at the bottom of each. *Calyx* ruſty-coloured, an inch long, turning green as it fades. *Corolla* half as long again as the calyx, and more ſlender, of a violet purple; the tube pale; deciduous. *Style* permanent as the fruit ripens, curved, projecting laterally out of the calyx. *Seeds* and *receptacles* tawny.

The generic diſtinctions between this plant and *Orobanche* are obvious enough; the ſingle-leaved ſpathaceous *calyx*, regular *corolla*, undivided *ſtigma*, and many-celled *capſule*, whoſe internal ſtructure Dr. Roxburgh ſays he could never well determine, but the numerous convoluted *partitions*, or *receptacles*, which he deſcribes, are ſufficiently different from *Orobanche*. As to habit, theſe genera nearly agree, both having a ruſty pubeſcence, a purple hue, and, if we miſtake not, paraſitical *roots*; though the *infloreſcence*, and the form of the *calyx*, differ in each. *Aeginetia* appears to want the nectariferous *gland*, found at the baſe of the *germen*, in front, in *Orobanche*; it wants alſo the *bracteas*, obſervable in every ſpecies of the laſt-named genus, except the *uniflora*.

ÆGISSUS. See ÆGYPTUS.

AEGLE, in *Botany*, the name of one of the HESPERIDES, (ſee that article,) choſen by Mr. Correa de Serra for this genus, as Linnæus had already dedicated one to her ſiſter *Arethuſa*.—Correa Tr. of Linn. Soc. v. 5. 222. Ait. Hort. Kew. v. 3. 284.—Claſs and order, *Polyandria Monogynia*. Nat. Ord. *Aurantia*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, ſmall, with five ſhallow lobes, at length deciduous. *Cor.* Petals five, ovate, acute, ſpreading, many times longer than the calyx. *Stam.* Filaments numerous, ſhort, awl-ſhaped, inſerted into the external part of the elevated receptacle of the flower; anthers oblong, erect, heart-ſhaped at the baſe. *Piſt.* Germen ſuperior, ovate; ſtyle ſhort, thick; ſtigma oval, obſcurely furrowed. *Peric.* Berry coated, globular, ſmooth, almoſt woody when ripe, not burſting, of ten or twelve cells obliterated as the pulp arrives at maturity. *Seeds* ovate, compreſſed, numerous in each cell, in a ſimple row, each inſerted by a ſhort partial ſtalk into the central column; albumen none.

Eſſ.

Eſſ. Ch. Petals five. Calyx five-cleft, inferior. Berry coated, of numerous cells. Seeds many.

1. Ae. *Marmelos.* Thorny Aegle, or Bengal Quince. Correa as above, 223. Willd. n. 1. Roxb. Coromand. v. 2. 23. t. 143. (Cratæva Marmelos; Linn. Sp. Pl. 637. Willd. Sp. Pl. v. 2. 853. Cydonia exotica; Bauh. Pin. 435. Cucurbitifera trifolia indica, fructûs pulpâ Cydonii æmula; Raii Hiſt. v. 2. 1665. Pluk. Phyt. t. 170. f. 5. Bilacus; Rumph. Amboin. v. 1. 197. t. 81. Covalam; Rheede Hort. Mal. v. 1. 37. t. 37. *Maredoo* of the Telingas.)—Native of the mountainous parts of the coaſt of Malabar, ſometimes of the low lands, flowering during the hot ſeaſon. This is a rather large tree, whoſe *trunk* is nearly erect, clothed with aſh-coloured *bark*. *Branches* ſcattered. *Spines* ſtipulary, in pairs, awl-ſhaped, pungent, ſtrong, an inch in length, ſometimes wanting. *Leaves* irregularly ſcattered, on downy *ſtalks*, ternate; *leaflets* elliptic-oblong, with a blunt point, ſerrated, ſingle-ribbed, veiny, ſmooth; tapering at the baſe; unequal in ſize; the odd one largeſt, about three inches long. *Flowers* of a dirty white, in ſhort, aggregate, terminal and axillary, cluſters. *Fruit* the ſize of a large orange, with a hard ſmooth greyiſh ſhell, from which the Dutch in Ceylon are ſaid to prepare a perfume. Dr. Roxburgh ſpeaks of this *fruit* as delicious to the taſte, and exquiſitely fragrant, of a laxative quality, which renders it particularly ſerviceable in habitual coſtiveneſs. A clear tenacious gum, enveloping the ſeeds, makes a good cement. The wood of the tree is hard and durable, of a light chocolate colour, variegated with dark veins, and ſerves for many purpoſes. Mr. Correa mentions another, likewiſe arboreous, ſpecies of *Aegle*, found in the Eaſt Indies, and preſerved in ſir J. Banks's herbarium, but of this he has unfortunately neglected to give either a name or deſcription, nor have we ſeen any ſpecimens. See FERONIA for a genus next akin to the above.

AEGOPOGON, already mentioned and explained, in its proper place, as a ſynonym of the *Spiræa Ulmaria*, or rather perhaps *S. Aruncus*, is now adopted for the generic appellation of a South American genus of graſſes, by Willdenow, after Humboldt and Bonpland.—Willd. Sp. Pl. v. 4. 899. Paliſot de Beauvois Agroſt. 122. t. 22. f. 3, 4. Kunth Nov. Gen. et Sp. v. 1. 132.—Claſs and order, *Polygamia Monoecia*. (Rather *Triandria Digynia*.) Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two valves, ſingle-flowered; the valves cloven, with an intermediate awn. Corolla of two valves; the outer with three awns; inner with two. Seed ſolitary, unconnected with the glumes. One or two lateral male flowers.

1. Ae. *cenchroides*. Spreading Aegopogon. Willd. n. 1. Paliſ. de Beauv. as above, f. 3. Kunth n. 1. t. 42.—Cluſter lax. Flowers all equally ſtalked.—Gathered by Humboldt and Bonpland, on the expoſed ſummit of mount Avila, near the town of Caraccas; alſo in Quito; flowering from January to April. *Root* perennial. *Stems* numerous, branched at the baſe, forming a tuft; thoſe which do not flower, about as long as the finger; the reſt a ſpan in height, naked above, denſely leafy below. *Leaves* linear; the lowermoſt an inch, or an inch and a half long; the upper ones ſhorter. *Sheaths* ſtriated, ſmooth, ſlightly membranous at the edges. *Stipula* divided. *Cluſter* ſimple, rather turned to one ſide, but ſpreading looſely. This graſs has the aſpect of *Cenchrus ciliaris*, or of *Lappago racemoſa*. *Willdenow*. We know it only from this author's deſcription, and the figures cited. From M. de Beauvois our knowledge of the following ſpecies is entirely derived.

2. Ae. *puſillus*. Small Aegopogon. Paliſ. de Beauv. as above, f. 4.—Cluſter denſe, turned one way. Perfect flower ſeſſile.—Native country not recorded. The perfect *flowers* of this ſpecies, whoſe *cluſter* is repreſented about half the ſize of the foregoing, are ſeſſile, their *calyx* apparently of two equal, awl-ſhaped, undivided glumes. The two lateral, or male, *flowers* are elevated on equal, ſlender, parallel ſtalks, twice their own length, though but half as long as the intermediate perfect *flower*. The inner valve of their *calyx* ſeems entire, though awned. Their *corolla* conſiſts of two entire, not cloven, valves, one of which only is awned. We do not pretend, without the inveſtigation of ſpecimens, to reconcile theſe contradictions of the generic character, nor to judge how far M. de Beauvois is right in uniting with this genus Mr. Brown's AMPHIPOGON, hereafter to be noticed in its proper place.

3. Ae. *geminiflorus*. Twin-flowered Aegopogon. Kunth as above n. 2. t. 43.—Male flower ſolitary.—Gathered by Humboldt and Bonpland, on the banks of the river Orinoco, between Cerro Duida and Rio Tamatama, near Eſmeraldam, flowering in May. Habit much like the firſt ſpecies, but the *ſpikelets* are conſiderably ſmaller, while the central awn of one valve of the perfect *flower* is remarkably long, ſtout, and rough. Each *flower* is ſupported by a ſhort partial ſtalk, and there are only two to each *ſpikelet*, not three as in the two foregoing ſpecies.

ÆOLUS, in *Mechanics*, ſubjoin, ſee VENTILATOR.

ÆON, l. 4, add—Homer Π. v. 453. Pindar Olym. A. v. 18. Hence by an eaſy figure it is uſed to denote the cuſtoms and manners of life. Eſper. ii. 2.

AERIDES, in *Botany*, from ἀηρ, *aër, air;* becauſe one of the principal plants of this genus has long been celebrated, under the name of *Flos aëris*, for living entirely, as was ſuppoſed, upon air. This plant, and ſeveral others agreeing with it in habit, though not all perhaps in generic character, have been ſent from the Eaſt Indies to Europe, in baſkets, without earth or any other apparent ſource of nutriment, and have not only ſurvived, but bloſſomed during their voyage, as well as after their arrival. Their ſtout fibrous roots, always more than half naked as they run over the branches of trees, having entwined themſelves among the ſticks of the baſket, might perhaps imbibe ſuſtenance from the air in thoſe circumſtances, as readily as in their natural ſituation; juſt as a pea will germinate and grow in moiſt cotton.—Loureir. Cochinch. 525. Swartz in Schrad. Journ. v. 2. 233. t. 2. f. 4. Ejuſd. Neues Journ. v. 1. 88. Kon. Tracts 195. t. 8. f. Y. Willd. Sp. Pl. v. 4. 130. Ait. Hort. Kew. v. 5. 213.—Claſs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. reformed. *Cal.* Perianth of three equal, ſpreading, coloured leaves, gradually dilated upwards, ſomewhat wavy, rather obtuſe. *Cor.* Petals two, much like the calyx-leaves in colour, ſize, and figure. Nectary a lip without a ſpur, ſhorter than the petals, inſerted into the baſe of the ſtyle, gibbous underneath like a bag, often reverſed over the column. *Stam.* Anther a vertical, hemiſpherical, moveable, deciduous lid, of two or four cells; maſſes of pollen globular, ſtalked, in pairs. *Piſt.* Germen inferior, oblong; ſtyle erect, ſemi-cylindrical, concave in front; ſtigma in front, near the anther. *Peric.* Capſule obovate-oblong, with three large and three intermediate angles, of one cell and three valves, ſeparating between the angles. *Seeds* numerous, minute, each inveſted with a chaffy tunic.

Eſſ. Ch. Calyx and corolla ſpreading, nearly uniform. Lip pouch-like, without a ſpur. Anther a vertical moveable lid.

The

The ſpecies of this rare oriental genus are not at all diſtinctly known. Willdenow enumerates ſeven, to which we have ſome additions.

1. A. *retuſum*. Blunt-leaved Air-bloſſom. Swartz n. 1. Willd. n. 1. (Epidendrum retuſum; Linn. Sp. Pl. 1351. Limodorum retuſum; Swartz Nov. Act. Upſ. v. 6. 80. Anſieli Maravara; Rheede Hort. Malab. v. 12. 1. t. 1. Raii Hiſt. v. 3. 588. Orchis abortiva aizoides malabarienſis, flore odoratiſſimo variegato, intus aviculam repræſentante; Rudb. Elyſ. v. 2. 220. f. 5.)—Leaves nearly radical, linear, with two equal terminal notches. Cluſter many-flowered, twice the length of the leaves. Capſules obovate.—Native of trees in the Eaſt Indies, flowering at the beginning and end of the rainy ſeaſon, that is, in April and October, and laſting long. The plant is three feet high, attached to the bark by thick inflexed downy-coated fibrous *roots*, of a muſky ſmell. *Leaves* ſpreading in two ranks, linear, ſtout, rigid, channelled, ſmooth, abrupt as if bitten off at the end, which ſeems characteriſtic of the genus; in this ſpecies the two notches are repreſented in the figure, which is all our authority, as equal and uniform. The *flowers* are very numerous, about forty, in ſeveral ſtalked, terminal *cluſters*, all expanded at once, whitiſh beſprinkled with red, blue and duſky ſpots. The *lip* is ſaid to be pure white on both ſides, with a tongue-like appendage, brilliant with blue and red. Each *flower* is leſs than an inch in diameter.

2. A. *præmorſum*. Jagged-leaved Air-bloſſom. Willd. n. 2. ("Bitim Maram Maravara; Rheede Hort. Malab. v. 12. 5. t. 2." Raii Hiſt. v. 3. 589. Orchis abortiva aizoides malabarienſis altera, flore odorato ſanguineo colore, intus aviculam purpuream referente; Rudb. Elyſ. v. 2. 221. f. 6.)—Leaves radical, linear, variouſly and unequally notched at the end. Cluſter many-flowered, twice the length of the leaves. Capſules cylindrical.—Found on trees in Malabar. Nearly akin to the preceding, the *flowers* being in like manner ſpotted with red and blue, and moreover with yellow and green. The *column* is purple. Rheede ſays this ſpecies acquires a poiſonous property by growing on the *Canſjira*, a ſhrub or tree akin to *Daphne;* which, if correct, is very remarkable. Perhaps fragments of the bark of that tree, which may well be ſuppoſed highly virulent, may have been gathered with the roots of the paraſitical plant.

3. A.? *laſiopetalum*. Woolly-flowered Air-bloſſom. Willd. n. 3. (Epidendrum Flos aëris? Retz. Obſ. faſc. 6. 64.)—Stem branched, creeping. Leaves ovate-oblong, each ſeated on a bulb. Calyx externally woolly, acute as well as the petals.—Found by Kœnig, on trees in the Eaſt Indies. There is nothing in Kœnig's deſcription of the *flower* to convince us of this being an *Aerides*, while the account of its acute leaves, (not deſcribed as jagged or abrupt,) and their bulbous accompaniment, render it probable that Willdenow has here made a miſtake. We retain this ſpecies and the next, merely as we find them in his work, for future enquiry.

4. A.? *matutinum*. Morning Air-bloſſom. Willd. n. 4. (Epidendrum Flos aëris, vel Saaronicum; Retz. Obſ. faſc. 6. 58.)—This having a ſpur to the *nectary*, according to Kœnig's deſcription, cannot belong to the genus before us. We therefore decline attempting a ſpecific character, or any neceſſary correction of Willdenow's.

5. A. *odoratum*. Fragrant Air-bloſſom. Willd. n. 5. Ait. n. 1. (A. odorata; Loureir. n. 1.)—Stem aſcending. Leaves linear, emarginate, reflexed. Cluſters axillary. Lip three-cleft; lateral ſegments obtuſe.—Found on trees in China and Cochinchina, ſometimes pendulous. *Root* of numerous thick fibres, entangled together. *Stem* nearly erect, a foot high. *Leaves* large and thick. *Cluſters* ſimple, long, drooping. *Flowers* pale, rather fleſhy, ſweet-ſcented. If this ſpecies be hung up in a houſe, it will continue to grow, and to flower for many ſucceſſive years; which Loureiro ſays he had long experienced. Sir Joſeph Banks is recorded to have introduced this *Aerides* into the ſtoves at Kew, in 1800, but it has never flowered. The late ducheſs of Portland received an air-plant, as it was called, from China or the Eaſt Indies, about twenty-five years ago, which we rather believe to have been the *Epidendrum teſſellatum*, Roxb. Corom. v. 1. 34. t. 42, *Cymbidium* n. 34. Willd. Sp. Pl. v. 4. 102; or at leaſt very near that ſpecies. It came in a baſket, without earth, in perfect health, and afterwards bloſſomed in the ſtove at Bulſtrode; whether it received any different treatment there we have no recollection.

6. A. *arachnites*. Great Japaneſe Air-bloſſom. Swartz n. 2. Willd. n. 6. (Epidendrum Flos aëris; Linn. Sp. Pl. 1348. E. n. 7; Linn. Act. Upſ. ann. 1740. 37. Limodorum Flos aëris; Swartz Nov. Act. Upſ. v. 6. 80. Angurek Katong-ging; Kæmpf. Amœn. Exot. 868. t. 869. f. 1.)—Stem aſcending. Leaves linear-lanceolate. Calyx-leaves and petals linear, revolute; dilated at the extremity. Lip cloven in front, with an internal cloven appendage.—Native of Japan, growing paraſitically on trees, and much admired for the muſky ſcent of its large handſome flowers. The *leaves* are ſaid to be narrow, thick, and ruſhy. *Flowers* from ſeven to twelve together, in a looſe ſimple *cluſter*. *Calyx-leaves* and *petals* all nearly ſimilar, each two inches long, linear; convex above; concave underneath; ſuddenly dilated at the end into a quadrangular form, all lemon-coloured, beautifully ſpotted with purple. *Nectary* much ſhorter than the *petals*, ſomewhat ſtalked, conſiſting of a hollow abrupt *lip*, ſmooth, cloven deeply in front, ending below in a ſhort point, from whoſe cavity ſprings an erect, fleſhy, divided lobe or appendage. Such is the *nectary* of the plant figured by Dr. Swartz, of which two ſpecimens are preſerved in the Linnæan herbarium; but Kæmpfer's figure exhibits a very different appearance of the ſame part, like three hairy leaves ſurrounding the *column*, in a manner we have never witneſſed in any one of the *Orchideæ*. We ſuſpect two ſpecies may be confounded by authors.

7. A. *coriaceum*. Leathery-leaved Air-bloſſom. Swartz n. 4. tab. 2. f. 4, *e*, *f*. Willd. n. 7.—"Stem-leaves ovate, pointed, ſomewhat coriaceous, ſtriated. Spikes panicled." —Found on trees in Madagaſcar. The *flower* as repreſented in Dr. Swartz's figure, which is all we know of this plant, is hardly an inch wide; the *lip* a deep pouch, bearing in front a ſmall deflexed appendage. *Column* very ſhort.

8. A. *Boraſſi*. Fan-palm Air-bloſſom. Buchanan MSS. —Leaves radical, linear-oblong, obtuſe, obliquely emarginate. Cluſter leafleſs, radical. Lip with a revolute undivided border.—Found by Dr. Buchanan growing on *Boraſſus flabellifer*, in the Myſore. The thick cracked or jointed fibres of the *root* have each a central tough thread. *Stem* none. *Leaves* equitant, about ſix, a ſpan long and an inch wide; their points rounded, but unequally, one ſide extending further beyond the notch than the other. *Cluſter* ſimple, ſcarcely ſtalked, twice the length of the foliage, deflexed, many-flowered, lax, with a few ſheathing ſcales at the baſe. *Flowers* about an inch and a half in diameter. *Calyx-leaves* ovato-lanceolate, obtuſe, ſomewhat revolute, near an inch long, pale buff with a purpliſh central ſtripe. *Petals* like them, but flat, and rather broader. *Nectary* half

as long, red, ringent, its revolute border as long as the pouch.

9. A. *maculatum*. Spotted-ſtalked Air-bloſſom. Buch. MSS.—Stem creeping. Leaves elliptic-oblong, equally emarginate. Cluſter lateral, ſtalked, corymboſe. Lip the length of the petals; its border pointed, dilated at each ſide.—Gathered by Dr. Buchanan, on trees in the Myſore country. The *ſtems* ſend out very long curling fibrous *roots*. *Branches* ſhort, leafy. *Leaves* obtuſe, emarginate, hardly two inches long; ſheathing at the baſe. *Flower-ſtalk* lateral, oppoſite to the loweſt leaf on the branch, and protruding through its ſplit baſe, a ſpan long, erect, copiouſly ſpotted with dark purple, furniſhed with a few ſcattered *bracteas*, and terminating in a denſe corymboſe *cluſter* of ſix or eight yellow unſpotted *flowers*, with a ſimilar *bractea* to each partial ſtalk. *Calyx-leaves* and *petals* obovate, about half an inch long, nearly uniform. *Lip* ſomewhat boat-ſhaped, with a deep keel, and prominent aſcending point, accompanied at each ſide by a rounded dilatation of the margin. The back of the *flower* is tinged with greeniſh or purpliſh brown.

10. A. *daſypogon*. Denſely-bearded Air-bloſſom.—Stem aſcending. Leaves ovate, with a jagged point. Umbels denſe. Border of the lip kidney-ſhaped, denſely bearded.—Found by Dr. Buchanan, in Upper Nepaul. *Roots* compoſed of long, white, entangled fibres, running over the moſſy branches of trees. *Stems* ſolitary, ſhort, recurved, leafy. *Leaves* alternate, ſheathing, broadly ovate, about three inches long, fleſhy; ſmooth above; minutely ſcaly beneath; ſomewhat revolute; with three crowded, unequal, ſharp teeth at the point. *Flower-ſtalks* lateral, ſolitary, half the length of the leaves, each bearing a denſe *umbel* of numerous, nearly ſeſſile, very beautiful and ſingular, reverſed *flowers*, each hardly an inch in diameter. *Calyx-leaves* and *petals* ſimilar, obovate concave; dark red on the upper ſide; green on the under. *Lip* keeled, but not very deeply, globoſe, yellowiſh, ſpotted with red; its border as long as the *petals*, dilated, kidney-ſhaped, white; dotted on the ſmooth diſk with crimſon; fringed and thickly clothed towards each ſide with ſhort, fibrous proceſſes, reſembling velvet. *Capſule* three inches long.

11. A. *calceolare*. Slipper Air-bloſſom. Buch. MSS.—Stem creeping. Leaves linear-oblong, falcate, unequally jagged at the point. Umbels ſpreading. Border of the lip hemiſpherical, denſely bearded.—Gathered by Dr. Buchanan, on the moſſy branches of trees, in Upper Nepaul. *Stem* creeping, by means of very long, ſimple, ſtout fibres, thrown out from within the ſheaths of former leaves; its upper part aſcending, leafy, three or four inches long. *Leaves* two-ranked, ſpreading, aſcending, a ſpan long, hardly an inch broad; jagged, with two ſharp teeth, at one ſide of the point only. *Umbels* oppoſite to ſeveral of the lower leaves, ſolitary, ſtalked, lax, each of about five *flowers*, which are rather ſmaller than thoſe of the laſt ſpecies, but the pouch of the *lip* is conſiderably larger in proportion, prominent, yellow variegated with red, as well as the diſk of its border, which laſt is denſely bearded with white fibres like the foregoing. *Calyx-leaves* and *petals* uniform, obovate, incurved, yellow ſpotted with red.

12. A. *rigidum*. Rigid Air-bloſſom. Buch. MSS.—Stem creeping. Leaves oblong, obtuſe, rounded, unequally at the point, four times as long as the corymboſe cluſters. Lip with an obovate ſmooth border, the ſize and ſhape of the petals.—Found by Dr. Buchanan, running over rocks and large ſtones in Upper Nepaul. The *ſtem* is woody, a yard long, and as thick as the finger, creeping among moſſes, and ſending out here and there, through the baſes of the leaves, very thick radicles. *Leaves* two-ranked, alternate, a foot long, extremely thick and coriaceous, three-ribbed, oblique at the termination, one ſide being greatly extended, in a round lobe, beyond the rib, the other ſloping off below it. The lower part of each leaf has a joint, where it finally ſeparates, leaving the ſheathing permanent baſe, or *footſtalk*, as in *A. Boraſſi*, *maculatum*, and others of this genus and natural order. *Flower-ſtalks* oppoſite to the leaves, ſolitary, alternate, about three inches long, diſtantly racemoſe in the lower part, corymboſe at the ſummit, each bearing from five to ſeven nearly or quite ſeſſile *flowers*, yellow ſpotted with red, about the ſize of the laſt. *Calyx-leaves* and *petals* obovate, uniform, erect. *Lip* agreeing with them in colour and ſhape, except the ſmall prominent pouch at its baſe, and the apex being a little reflexed.

13. A. *undulatum*. Wavy-flowered Air-bloſſom. (Epidendrum præmorſum; Roxb. Corom. v. 1. 34. t. 43. Cymbidium præmorſum; Swartz Nov. Act. Upſ. v. 6. 75. Schrad. Neues Journ. v. 1. 75. Willd. Sp. Pl. v. 4. 103. Thalia Maravara; Rheede Hort. Malab. v. 12. 6. t. 4. Raii Hiſt. v. 3. 590. Orchis abortiva, floribus luteis minoribus, radiis rubris; Rudb. Elyſ. v. 2. 222. f. 8.)—Stem aſcending. Leaves linear, channelled, abrupt, acutely pointed, thrice as long as the corymboſe cluſters. Lip with an obovate flat border, the ſize and ſhape of the petals.—Native of trunks and branches of trees, in the hilly parts of Malabar and Coromandel, flowering in October. The *roots* conſiſt of numerous long ſtout fibres. *Stem* aſcending, leafy, four or five inches high. *Leaves* two-ranked, alternate, recurved, coriaceous, ſix inches long and one broad, concave, ending in a ſemicircular notch, whoſe two extremities are pointed, and nearly equal. *Infloreſcence* like the laſt. *Flowers* rather ſmaller, fragrant. *Calyx-leaves* and *petals* obovate, equal, ſlightly wavy at the edges, yellow, marked with tranſverſe, crimſon, undulating lines. *Lip* the ſize and ſhape of the petals, white dotted with red, its pouch but ſlightly indicated in parts of Dr. Roxburgh's figure, and probably ſo little obvious in nature, as to have eaſily eſcaped the artiſt's notice. Notwithſtanding this apparent exception to the generic character, the preſent plant, improperly confounded by Linnæus with his *Epidendrum furvum*, is ſo ſtrikingly allied to the laſt, and conſequently to the two immediately preceding, that we muſt preſume it to be an *Aerides*. If, on examination, it ſhould prove to want the pouch, a freſh inveſtigation muſt be inſtituted, reſpecting the diſtinguiſhing characters of this genus and *Cymbidium*.

The habit of *Aerides* is peculiar, though not perhaps excluſively ſo, in the termination of its *leaves*, always more or leſs abrupt, unequal, or jagged. We have never ſeen a living ſpecimen of any of the genus, but Dr. Buchanan's fine and ſcientific coloured figures, drawn from nature under his own inſpection, are as preciſe and ſatisfactory as poſſible, and that excellent botaniſt has himſelf pointed out to us the characters and habit of *Aerides*, as a natural genus.

With regard to the name, it well expreſſes the quality of living upon air alone, for which ſeveral ſpecies have attracted notice. Linnæus, who included the whole, with various other things, in his genus of Epidendrum, (ſee that article,) particularly applied the ſpecific name of *Flos aëris* to our ſixth ſpecies, citing with a query in *Act. Upſ.* the 2d chapter verſe 7th of the Wiſdom of Solomon. This, in the Engliſh tranſlation is, "Let no flower of the ſpring paſs by us." In a Latin verſion before us this text is rendered "*ne prætereat nos jucundus aër.*" Whence this ambiguity aroſe, or whether Linnæus had any where read *flos veris*, which he confounded with *flos aëris*, we have not materials to determine. At any rate, the text in queſtion has evidently no reference to this, or to any other particular plant whatever.

AEROSTATION, col. 5, l. 39, for 84 *r.* 840; col. 27, l. 17, for circumference *r.* diameter.

ÆRUGINOSUS, in *Ornithology*. See *Moor* BUZZARD.

ÆSCHYLUS, col. 2, l. 24, for wrote *r.* chofe; l. 29, for furious *r.* ferocious; l. 36, for referred *r.* transferred.

ÆSOP, col. 2, l. 60, *r.* lived more than 350 years, &c.

ÆSOP, CLODIUS, l. 2, after Rome, add, B.C. 79.

AESTIVATIO, in *Botany and Vegetable Phyfiology*, a term ufed by Linnæus for the mode in which the petals, or the fegments, of a *corolla* are arranged with refpect to each other, particularly before they expand. (See COROLLA.) The word comes from *æftas*, fummer, and *æftiva*, fummer-quarters, fummer being the ufual flowering feafon, and the *corolla* the fhelter or accompaniment of the organs of fecundation. So *Vernatio* expreffes the arrangement of the leaves of plants in the bud, or, in other words, their vernal condition. *Aeftivatio imbricata*, expreffes the divifions of the *corolla* being imbricated, or folded over each other, either from left to right, that is, with the motion of the fun, as in *Ciftus*; or the reverfe, of which latter Linnæus has in his manufcripts mentioned *Phlox* as one example, and we would point out *Hypericum* as another. *Aeftivatio valvata* is when the divifions of the *corolla* meet in the bud like valves, fide by fide, as in *Protea* and its allies. Of this *Periploca* is an inftance, notwithftanding the obliquity obfervable in the fegments of that flower after expanfion. Linnæus, in the MSS. above cited, fpeaks of *Pæonia* as having, like its near relation *Aconitum*, one petal exterior to all the reft, though the *corolla* is what would be termed regular in the firft genus, and very irregular in the fecond. Such a diverfity indeed is of fmall moment, for Mr. Correa has obferved that every natural order, as far as he could examine, poffeffes irregular and regular flowers. In general the direction of the parts of a *corolla*, as to their æftivation (if we may ufe that word), are invariably alike in genera of the fame natural order. But HERMANNIA, (fee that article,) affords a remarkable exception, every one of its fpecies that we have feen bearing two *flowers* on the fame ftalk, has the *petals* of one of thofe flowers rolled to the right, while thofe of the other are difpofed in a contrary pofition. Mr. Brown, in his learned *Prodromus* of New Holland plants, has paid more attention to the æftivation, in defining his natural orders, than any other botanift, and the term *æftivatio valvata* is, if we miftake not, his own invention.

ÆTH, l. 4, infert after Bruffels. It is the chief place of a canton, in the department of Jemappe, and diftrict of Tournay. The place contains 7634, and the canton 14,828 inhabitants. The territory includes 115 kiliometres, and 11 communes. See ATH.

AETHIONEMA, in *Botany*, fo named by Mr. Brown, apparently in allufion to fome tawny or fun-burnt tinge in the ftamens, from αιθω, *to fcorch*, and νημα, *a ftamen*. We perceive in our dried fpecimens an occafional purple hue in thefe parts. It may perhaps be more remarkable in the fpecies we have not feen.—Brown in Ait. Hort. Kew. v. 4. 80.—Clafs and order, *Tetradynamia Siliculofa*. Nat. Ord. *Siliquofæ*, Linn. *Cruciferæ*, Juff.

Eff. Ch. Pouch with boat-like winged valves (fometimes not burfting). Longer filaments either combined, or finely toothed towards the top. Infertion of the calyx unequal. *Brown.*

1. Ae. *faxatile*. Rock Aethionema. Ait. n. 1. (Thlafpi faxatile; Linn. Sp. Pl. 901. "Schkuhr Handb. v. 2. 223. t. 180." See THLASPI, n. 6.)—Longer filaments diftinct. Leaves oblong, tapering at the bafe.—Native of the fouth of Europe. Cultivated by Miller in 1759.

2. Ae. *monofpermum*. One-feeded Aethionema. Ait. n. 2.—"Pouch fingle-feeded, without valves. Leaves oval or obovate."—Native of Spain. Cultivated in 1778, by Lee and Kennedy, at Hammerfmith. A hardy biennial, flowering in July and Auguft. We have feen no fpecimen of this fpecies. Our doubts refpecting the genus may be found under THLASPI.

AFER, DOMITIUS, col. 2, l. 11, for vanity *r.* variety.

AFFINITY, in *Chemiftry*. The celebrated doctrine of Bergman is the laft in order difcuffed under the article AFFINITY in the Cyclopædia: fince that time, however, very important changes in opinion have taken place, among chemifts, refpecting the nature and caufe of chemical affinity. Some of thefe are mentioned in fubfequent parts of the Cyclopædia, efpecially in the articles *Chemical* PROPORTIONS, SIMPLE *Bodies*, and *Atomic* THEORY; but it may not be deemed fuperfluous to give a fummary and connected view of the whole in this place.

Bergman's doctrine of *elective* affinity, fo amply explained in the article above referred to, was univerfally admitted among chemifts till 1803, when Berthollet publifhed his Differtation on Affinity in the Memoirs of the Inftitute, and about the fame time his Chemical Statics. Berthollet confidered affinity as an *attraction* exifting between combining bodies. This attraction he appeared to confider as fimilar in its nature to that which exifts between the planets, or in fhort, the principle of gravitation. It confequently, in his opinion, increafed with the *mafs* of bodies. According to this doctrine, therefore, bodies which have an affinity or attraction for one another, have a tendency always to combine, in a greater or lefs degree, chiefly in proportion to their mafs. Thus, though barytes appears to poffefs a ftronger affinity for fulphuric acid than potafh, yet if we prefent a great quantity of potafh to a fmall quantity of fulphate of barytes, the potafh will feparate a portion of the acid.

According to Berthollet, therefore, affinity is not *elective*. A fubftance which has a ftronger affinity is not capable of feparating entirely thofe which have a weaker, unlefs fome other caufe than mere ftrength of affinity operates. Inftead of feparating entirely the weaker body, it divides with it the bafe to which that body was united, each combining with a part of fuch bafe in the compound proportion of the ftrength of its affinity and of its quantity.

But no facts in chemiftry are better eftablifhed than thofe in which the addition of a third body frequently feparates two fubftances previoufly united, the third body taking the place of one of the conftituents, which is thereby feparated altogether. Thus, if fulphuric acid be dropped into a folution of nitrate of barytes, or potafh into a folution of nitrate of lime, the fulphate of barytes and the lime will precipitate, leaving, in the firft inftance, the nitric acid in a free ftate, and in the fecond, the potafh combined with the nitric acid inftead of the lime. Thefe and many other well-known facts appearing, at firft fight, contrary to Berthollet's doctrine, it was neceffary for him to reconcile them to it. For this purpofe, he called in the aid of the different modes of exiftence of bodies. According to him, therefore, whenever decompofition takes place, it is owing either to the *infolubility* or the *elafticity* of the ingredient which feparates. Sulphate of barytes being infoluble in water, while nitrate of barytes and nitric acid are foluble in that liquid, it muft happen,

happen, when the ſubſtances are mixed, that the inſoluble ſalt precipitates, on account of its inſolubility. It is the inſolubility of lime that cauſes it to precipitate when potaſh is dropped into nitrate of lime. Accordingly, when potaſh is dropped into nitrate of ſoda, no precipitation whatever takes place, becauſe both the potaſh and the ſoda are very ſoluble in water; but if we concentrate the ſolution ſufficiently by evaporation, cryſtals of nitrate of potaſh will be depoſited, becauſe that ſalt is much leſs ſoluble in water than nitrate of ſoda. So alſo, when nitric acid is poured upon carbonate of lime, the carbonic acid is diſengaged, and flies off, becauſe its elaſticity induces it to ſeparate from the ſolid, and aſſume the gaſeous ſtate as ſoon as the nitric acid weakens the attraction, by means of which it was attached to the lime.

"Thus," ſays Dr. Thomſon, to whom we have been particularly indebted in the compilation of the preſent article, "we have two doctrines reſpecting affinity oppoſite to each other. According to Bergman, affinity is *elective.* The body which has the ſtronger affinity diſplaces that which has a weaker, and the ſtrength of affinity may be meaſured by decompoſition. According to Berthollet, affinity is *not elective.* It never produces decompoſitions, but only combinations, and the decompoſitions which take place are owing to the agency of other cauſes. The ſtrength of affinity is not an abſolute quantity, but increaſes with the maſs of the attracting body. Berthollet's doctrines lead to the opinion, that bodies are capable of uniting together indefinitely in any proportion whatever: Bergman's, that they unite only in determinate proportions, and that theſe proportions are independent of the relative quantities of the combining ſubſtances which are preſent." See *Atomic* THEORY.

A moſt important fact reſpecting the combination of bodies was aſcertained by Richter. This was illuſtrated in an elaborate work, publiſhed at different times between 1792 and 1802, which contains the reſult of his reſearches on the decompoſitions and combinations of chemical bodies. He obſerved, that when two neutral ſalts, which mutually decompoſe each other, are mixed together, the two newly formed ſalts ſtill retain the ſame neutral ſtate as the two original ones, from which they were formed. He likewiſe obſerved, that the ſame proportions of baſes that ſaturate a given weight of one acid, ſaturate all the other acids; and the ſame proportion of acids that ſaturate one baſe, ſaturate all the other baſes; which law enabled him to explain why two neutral ſalts form, as above-mentioned, two new ſalts, likewiſe neutral. Theſe experiments and obſervations of Richter likewiſe enabled Fiſcher to attach a ſet of numbers to the acids and baſes, indicating the weight of each which will ſaturate the numbers attached to all the other acids and baſes.

Mr. Dalton, without being aware of the law already diſcovered by Richter, turned his attention to the ſubject about two years afterwards, and was ſtruck with the ſmall number of proportions in which ſimple ſubſtances are capable of combining, and the conſtancy of theſe proportions. This led him to form the doctrine of definite proportions, or atoms, as it is uſually termed, and which, as well as Gay Luſſac's modification of it, our readers will find fully explained in the article *Definite* PROPORTIONS.

About the ſame period, that is, in the year 1803, the grand law reſpecting the agency of the galvanic battery in the decompoſition of bodies was diſcovered by Berzelius and Hiſinger. This law is, that *oxygen and acids* are accumulated round the *poſitive pole;* while *hydrogen, alkalies, earths,* and *metals,* are accumulated round the *negative pole.* From this general law Berzelius deduced the conſequence, that the decompoſitions in ſuch inſtances were owing to the attractions exiſting between the bodies and the reſpective electricities. This opinion was afterwards extended by Davy, and the opinion in its extended form ſubſequently adopted by Berzelius himſelf. According to theſe celebrated chemiſts, chemical affinity is identical with electrical attraction, and bodies which unite chemically poſſeſs different kinds of electrical attractions. Every body, in their opinion, poſſeſſes a permanent elective ſtate, either reſinous or vitreous. Two bodies in the ſame ſtate of electricity have no affinity for each other. Thoſe in oppoſite ſtates have an affinity, and the ſtrength of the affinity is proportional to the degree of intenſity of the different electricities in the two bodies; and in order to make bodies ſeparate from each other, we have only to bring them into the ſame electrical ſtate, by making them both vitreous or both reſinous. See ELECTRICITY and GALVANISM.

Such is a ſummary account of the revolutions in opinion which have taken place reſpecting the nature of chemical affinity, and the principal diſcoveries which have given origin to theſe changes ſince the time of Bergman. We ſhall conclude this article with a few general remarks upon the ſubject.

In the firſt place, the queſtion whether the affinities of ſubſtances for one another be definite quantities capable of being repreſented by numbers, cannot, in the preſent ſtate of chemical ſcience, be ſatisfactorily determined. For though ſome ſubſtances always appear capable of ſeparating others, as, for example, barytes, potaſh; yet the reaſon may be, that the ſalts of barytes are leſs ſoluble than the ſalts of potaſh. Again, iron, as is well known, ſeparates oxygen from water at all temperatures; but, on the other hand, it has been equally well aſcertained, that the oxyd of iron is reduced when heated in hydrogen gas: "hence," ſays Dr. Thomſon, "we have no data for determining whether iron or hydrogen have the greateſt affinity for oxygen; each ſeeming capable of depriving the other of oxygen in the very ſame circumſtances."

In certain caſes, alſo, of double decompoſitions, it is often equally difficult to diſtinguiſh on which ſide the ſtrongeſt affinities lie. Thus, as is well known, carbonate of barytes and ſulphate of potaſh, when digeſted together, decompoſe each other, and are converted into ſulphate of barytes and carbonate of potaſh; but on the other hand, it has been equally ſatisfactorily ſhewn by Mr. Philips, that carbonate of potaſh is capable of decompoſing the ſulphate of barytes.

Pfaff, however, has ſhewn, that the tartrate of lime and the oxalate of lead are completely decompoſed by the addition of no more ſulphuric acid than is neceſſary to form ſulphate of lime and ſulphate of lead; and hence he infers, that the affinity of ſulphuric acid for lime and lead is actually ſuperior to the affinities of tartaric and oxalic acids for the ſame baſes reſpectively.

Berthollet has attempted to account for the firſt of the above experiments by the effect of *maſs;* and the experiments of Pfaff he endeavours to explain by the ſolubility of tartrate of lime and oxalate of lead, and the inſolubility of the ſulphate of lime and ſulphate of lead in acids. And this brings us,

In the ſecond place, to make a few remarks upon the ſuppoſed effects of *maſs,* and the *modes of exiſtence* of bodies in modifying chemical decompoſitions. With reſpect to the effects of *mass*, though at first sight there appear to be some circumstances favouring the opinions of Berthollet respecting its influence in chemical operations, yet we can by no means agree in supposing its influence so great as represented by that eminent chemist. No quantity of water, for example, would decompose sulphate of magnesia, though the affinity of sulphuric acid for water is very great, and though the insoluble nature of magnesia would, according to Berthollet's views, favour the union of the water with the acid. *Mass* here, therefore, either does not operate at all, or very feebly; and there are numerous analogous instances, well known to every chemist, to which the same remarks are equally applicable.

Again, it has been sufficiently established, that gases unite with reference to their volume, and cannot be made to unite in intermediate proportions, even although the result of their union be likewise a gas. Thus, for example, one volume of chlorine gas and one volume of hydrogen gas unite together, and form, without any condensation, or other apparent physical change, two volumes of muriatic acid gas, nor can they be made to unite in any other proportions. Here then is an example of chemical union, in which the effects of *mass* and *mode of existence* are quite out of the question.

From these, and particularly from many recently established facts, we think it proved beyond a doubt, that the power which determines bodies to combine in certain proportions is a property inherent in the original cause of their union, and consequently is a power totally different from that exerted by mass or other external circumstance, though it is not perhaps altogether independent of their influence. For further information, we refer our readers to sir Humphry Davy's Elements of Chemical Philosophy, where, besides an excellent account of the subject in general, they will find a masterly refutation of Berthollet's doctrines.

AFORE, l. 2, for stern *r.* stem; l. 4, ditto.

AFZELIA, in *Botany*, (see that article,) is *Gerardia cassioides*, Pursh 424. (G. Afzelia; Michaux Boreal.-Amer. v. 2. 20. Anonymos cassioides; Walt. Carolin. 171.)—"Panicled, with wand-like branches. Leaves pinnatifid, with linear bristle-like segments."—In dry sandy woods of Carolina and Georgia. Annual, flowering in July and August. *Flowers* small, yellow. *Pursh.*

Afzelia, Sm. Tr. of Linn. Soc. v. 4. 221, so named in honour of its discoverer, Adam Afzelius, M.D. Demonstrator of Botany at Upsal, author of several dissertations on Swedish Roses, and of other learned botanical treatises, is a very noble genus, of which we have long expected from Dr. Afzelius himself an illustration of the species. They are all natives of Sierra Leone.—Class and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminosæ*, Juss.

Ess. Ch. Calyx tubular; limb in four deciduous segments. Petals four, with claws; the uppermost very large. Two upper stamens imperfect. Legume with many cells. Seeds with a tunic at the base.

This genus consists of trees with large, smooth, abruptly pinnate, alternate *leaves*. The *flowers* are racemose, crimson, with small *bracteas*. *Legumes* woody and ponderous, smooth, ovate, acute. *Seeds* near an inch long, parallel, ovate, black, the lower half of each invested with a fleshy *tunic*, of a brilliant permanent scarlet, and a rather waxy appearance. The native Africans remove this tunic, and use the seeds for beads.

AGASTACHYS, from αγαστος, *remarkable*, and σταχυς, *a spike*, alluding to the abundance of its spiked flowers.—Brown Tr. of Linn. Soc. v. 10. 158. Prodr. Nov. Holl. v. 1. 371.—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juss.

Ess. Ch. Corolla regular, of four petals, cohering at the base, bearing the stamens in the middle. Filaments distinct. Nectary none. Germen sessile, triangular, single-seeded. Stigma unilateral.

1. A. *odorata*. Fragrant Agastachys. Br. n. 1.—Found in the southern part of Van Diemen's island, near Adventure bay, by Mr. David Nelson, and afterwards by Mr. George Caley. A *shrub*, perfectly smooth in every part. *Leaves* scattered, entire, flat. *Spikes* numerous, simple, terminal, as well as axillary from the upper leaves. *Flowers* alternate, sessile, with a solitary, hooded, permanent *bractea* to each. *Corolla* yellowish, deciduous. *Pistil* shorter than the *stamens*. The *fruit* has not yet been examined. *Brown.*

AGATE, col. 2, l. 15. They are conveyed from Germany in blocks; and cut by means of diamond powder into leaves for making caps for the pivots of mariners' needles, and other purposes.

AGATHARCHUS, in *Biography*, a painter of the isle of Samos, who is said to have been instructed by Æschylus in the art of introducing perspective into the decorations of theatres, and to have been the first who wrote on this subject, and communicated the art to Democritus and Anaxagoras.

AGDESTIS, in *Botany*, a fanciful name, adopted by De Candolle, from the authors of an unpublished Mexican Flora, whom he cites as Moç. and Sessé. It is applied to a doubtful genus, related to *Menispermum*, and perhaps a sort of *lusus naturæ*, having stamens and pistils in the same flower, which is almost unexampled in this tribe. The above denomination is that of a fabulous monster, said to have been male as well as female, and produced by Jupiter from the stone *Agdos*. This genus therefore being not clearly understood, and as yet very little known, may hereafter be abolished as well as its name.—Class and order, *Polyandria Monogynia*. Nat. Ord. *Sarmentaceæ*, Linn. *Menisperma*, Juss. *Menispermeæ*, De Cand.

Ess. Ch. Calyx inferior, of four leaves. Petals none. Filaments thread-shaped. Anthers oblong, cloven at each end, incumbent. Germen and style with four furrows. Stigmas four, spreading. Capsules four, combined.

1. A. *clematidea*. Bowery Agdestis.—Native of New Spain. A smooth shrub, with a branched, twining, round, striated *stem*. *Leaves* alternate, distant, stalked, exactly heart-shaped, entire, pointed; their lobes very obtuse. *Flowers* reddish, corymbose, axillary and terminal; their stalks three-cleft. *Fruit* unknown. This plant appears very nearly akin to *Clematis*.

AGGREGATÆ, the title of the 48th order in Linnæus's fragments of a natural system, placed between the *Stellatæ* and *Compositæ*. (See Aggregate.) This is a very miscellaneous and ill-defined order, of which it is by no means easy to seize the idea, much less to give any definition, or distinctive character. Vaillant first laid the foundation of this order, in the Memoires de l'Acad. des Sciences for 1722. "The natural order of *Aggregatæ*," says Linnæus, *Præl. in Ord. Nat.* 528, "was first investigated by Vaillant, in the *Mem. de l'Acad. des Sciences*. They agree with the *Compositæ* in having generally a common calyx as well as receptacle, collecting together many sessile florets, each of which has always an inferior germen. But there is a total difference with respect to the remaining parts of fructification, nor can these two orders be, by any means, united. The *calyx*, as above said, is common to many flowers,

flowers, or florets. The *common receptacle* is either naked, villous, hairy, or ſcaly. In the place of a *partial calyx* is the *corolla*, generally monopetalous, either regular or irregular, four-cleft or five-cleft, rarely polypetalous. *Stamens* four, with ſeparate *anthers*. *Germen* inferior (with reſpect to each floret). *Fruit* ſingle-ſeeded. The *flower* is therefore complete in this tribe, except only *Valeriana*, whoſe *calyx* is ſcarcely apparent. The *leaves* are often oppoſite. *Stem* often ſhrubby."

The genera which compoſe this order at the end of *Gen. Pl.* are, Sect. α. *Statice* only. β. *Hartogia, Brunia, Protea, Globularia, Leucadendron, Hebenſtretia, Selago, Cephalanthus, Dipſacus, Scabioſa, Knautia, Allionia*. But in his own copy Linnæus has drawn a line between *Selago* and *Cephalanthus*, removing the β to that place, and characterizing his ſection α "*alternifoliæ inferæ*," the remainder of the whole order beginning with *Cephalanthus*, being "*oppoſitifoliæ ſuperæ*." γ. *Valeriana, Morina, Boerhavia, Circæa*, to which *Mirabilis* is added in MSS. δ. *Lonicera, Chiococca, Trioſteum, Mitchella, Linnæa, Morinda, Conocarpus, Loranthus, Viſcum*, to which *Liſianthus* and *Hillia* are added, certainly with no propriety.

This order in fact is not one of our great botaniſt's moſt finiſhed or happy performances. It comprehends Juſſieu's *Dipſaceæ, Proteaceæ, Caprifolia*, with various ſolitary genera from different orders. *Statice* was always a ſtumbling block with Linnæus, nor does it aſſimilate with any thing among the *Aggregatæ*, being itſelf, however natural a genus, and as we think improperly ſubdivided by Tournefort and others, compoſed of ſpecies whoſe infloreſcence is eſſentially different among themſelves.

In his manuſcripts Linnæus has extended his firſt ſection as far as *Selago* incluſive, eraſing *Hartogia*, and giving the characters of alternate leaves, and a ſuperior germen to this ſection. To the ſecond ſection, which begins with *Cephalanthus*, he attributes oppoſite leaves, and an inferior germen. He thought *Statice* akin to *Brunia*, and *Protea* the ſame genus as *Leucadendron*. To his third ſection he more happily adds *Mirabilis*; but to the fourth he very unfortunately introduces *Liſianthus* and *Hillia*.

The intelligent botaniſt will without difficulty trace the numerous errors of the above arrangement to various cauſes. Several natural orders, now well defined, had not entered into the conception of Linnæus, ſuch as the very natural and diſtinct one of *Proteaceæ*; and of the *Caprifolia*, ſketched in his fourth ſection, he had evidently but an obſcure perception. Of the differences of the Proteaceous genera he had ſcarcely any knowledge. That he ſhould not have formed a right idea of *Hebenſtretia* and *Selago*, whoſe affinities are ſtill in ſome uncertainty, is not wonderful; but they are unqueſtionably much out of place here. See DIPSACEÆ for further obſervations reſpecting ſome of the *Aggregatæ*.

AGLABITES, l. 5, add, and governor in Africa, Heg. 184, A.D. 800. This dynaſty laſted till the year of the Hegira 296, A.D. 908, and poſſeſſed the country which extended from Egypt to Tunis.

AGLAIA, in *Botany*, αγλαια, *ſplendour and beauty*, alluding to the ſhining verdure of the leaves, and elegance of the whole plant.—Loureir. Cochinch. 173.—Claſs and order, *Pentandria Digynia*, Lour. (rather perhaps *Pentandria Monogynia*.) Nat. Ord. *Trihilatæ*, Linn. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, with five notches, minute, permanent. *Cor.* Petals five, ovate, concave, fleſhy, converging almoſt cloſely into the form of a globe. Nectary tubular, with five plaits, rather ſhorter than the petals. *Stam.* Filaments none; anthers five, ovate, included in the folds of the nectary. *Piſt.* Germen ovate, ſuperior; ſtyle none; ſtigmas two, oblong, erect. *Peric.* Berry ovate, ſmooth, watery, of one cell. *Seed* ſolitary, ovate, ſlightly compreſſed, with four furrows.

Eſſ. Ch. Calyx inferior, five-toothed. Petals five, converging in the form of a globe. Berry with one ſeed.

1. A. *odorata*. Fragrant Aglaia. *Cây ngâu* of the Cochinchineſe. (Camunium ſineuſe; Rumph. Amboin. v. 5. 28. t. 18. f. 1.)—Native of Cochinchina and China. Commonly cultivated in the latter country, for the ſake of its great beauty and agreeable ſcent. Rumphius ſays it was imported from thence to Amboyna, where it ſtill retained the Chineſe name of *Tſjiulang*, and was continually in leaf and bloſſom; being eaſily propagated by cuttings of the larger branches, whoſe bark muſt be bruiſed ſlightly, and then covered for the ſpace of a month with good earth and dung, till roots are thrown out, which are then to be cut off and tranſplanted. Loureiro deſcribes this plant as a *tree* eight feet high, with a yellowiſh hard *wood*, thin brown *bark*, and ſpreading *branches* forming a very denſe head. *Leaves* pinnate with an odd one, conſiſting of three or five oval, entire, ſmooth, ſhining *leaflets*, tapering at the baſe, on ſhort footſtalks. *Cluſters* axillary, oblong. *Flowers* yellow, very minute, globoſe, odoriferous. *Berry* ſmall, red.

Rumphius deſcribes the *flowers* orange-coloured, never producing fruit in Amboyna.

We cannot find that this plant of Rumphius is taken up by any author, nor is his deſcription ſufficient to procure it a place in any ſyſtematic work. Loureiro, however, has furniſhed us with ſufficient characters to enable us to judge of its natural order, and to determine that it is not, as he ſuſpected, the ſame genus with Thunberg's *Bumalda*.

AGNES, ST., l. *ult.*, for E. *r.* N.

AGNESI, MARIA GÆTANA. See GÆTANA.

AGRA, col. 2, l. 3, *r.* N. lat. 27° 15′. E. long. 78° 28′.

AGRICULTURE, col. *ult.*, after See BOARD of AGRICULTURE, add and SOCIETY.

AGRIPHYLLUM, in *Botany*, ſo called by Juſſieu, from αγρια, *the holly*, and φυλλον, *a leaf*, becauſe its ſinuated prickly leaves reſemble that ſhrub. Juſſ. Gen. 190. See BERCKHEYA hereafter.

AGUJARI, LUCRETIA. See FILER *un Son*.

AGUILLAS, CAPE. *Dele Cape* NEEDLES.

AGUILLAS *Bank*, a bank on the ſouthern coaſt of Africa, ſtretching from Cape Point acroſs the entrance of Falſe bay to the mouth of Rio Infanta, or Great Fiſh River, and to the 37th parallel of Southern latitude. Mr. Barrow conjectures that this bank at one time formed a part of the continent.

AHM, in *Commerce*. See STUBGEN.

AHMEDABAD. For AGMED'*s r.* AHMED'*s*; l. 6, *r.* Sebermathy.

AHMEDNAGUR, l. 2, *r.* Dowlatabad.

AHOUAS. Add—This was once a large and flouriſhing city, the capital of a province of the ſame name, and the winter reſidence of Artabanes, the laſt of the Parthian kings; but it is now a wretched town, containing 600 or 700 inhabitants, and ſituated on the banks of the river Karoon; 48 miles S. of Shuſter.

AIDAN, col. 2, l. 18, for biſhop *r.* king.

AIDERBEITZAN. At the cloſe add—It is ſeparated from Armenia by the river Araxes, and from Irak by the Kizilozoin, or Golden ſtream. This province, including Erivan with the Karabag and Karadag, is divided into twelve diſtricts, *viz.* Urumea, Ardebil, Tabreez, Maraga Khoee, Kulkham, Serab, Gumrood, Sa Bulagh, Karadag, Erivan, Nuckſhivan, and Miſkeen, yielding a revenue of 89,405 tomauns. The moſt pictureſque, and at the ſame time moſt flourishing division of Aiderbeitzan, or Azerbijan, lies along the N. and W. borders of the lake Urumea from Tabreez to the confines of Armenia, in which direction are the towns of Shebuster, Tasoui (in ruins), Selmast, Khoee, and Urumea.

AIDIA, in *Botany*, a genus of Loureiro's, unknown to us but from his description, whose name, from αιδιος, *eternal*, alludes to the indestructible nature of the wood.—Loureir. Cochinch. 143.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Caprifolia*, Juss.

Gen. Ch. *Cal.* Perianth superior, tubular, five-toothed, erect. *Cor.* of one petal, salver-shaped; mouth of the tube woolly; limb in five deep lanceolate segments. *Stam.* Filaments none; anthers five, linear, inserted into the corolla between its segments. *Pist.* Germen ovate, inferior; style on a level with the anthers; stigma ovate-oblong. *Peric.* Berry ovate, "calycine," (meaning crowned by, and confluent with, the calyx,) small, umbilicated, of one cell. *Seed* solitary, ovate.

Eff. Ch. Corolla salver-shaped, woolly in the throat. Anthers linear, sessile between the segments of the corolla. Berry calycine, single-seeded.

1. *A. cochinchinensis*. Everlasting-wood. *Cây Tlai* of the Cochinchinese.—Native of Cochinchina. A large *tree*, with spreading *branches*. *Leaves* opposite, lanceolate, entire, smooth. *Flowers* white, in short, lax, axillary *clusters*. The *wood* is white, heavy, composed of thick fibres, and not handsome. Its chief use is for building the lower parts of houses, and foundations of bridges, being extremely durable, either under ground or in water. *Loureiro*.

AIMONTE. Add, See AYEMONTE.

AINSWORTH, ROBERT, l. 2, for Woodyale *r.* Woodyate.

AIR, col. 11, l. 44, insert elastic, and *r.* whatever elastic matter, &c.

AIR, *Atmospheric*, in *Chemistry*. The most recent experiments shew that atmospheric air is composed by bulk of about 21 *per cent.* of oxygen and 79 *per cent.* of azote; and this coincides so nearly with four volumes of azote and one of oxygen, that Dr. Prout has been induced to consider this proportion as the true composition of atmospheric air, and consequently that it is a real chemical compound composed of one atom oxygen and two of azote. Upon this supposition, and the supposition that the atom of oxygen be 10 and the atom of azote be 17.5, atmospheric air will be composed by weight of

$$\left.\begin{array}{ll}\text{Oxygen} & 22.22\\ \text{Azote} & 77.77\end{array}\right\}\text{ and by bulk of }\left\{\begin{array}{l}20\\80\end{array}\right.$$

And the specific gravity of oxygen gas will be 1.1111 and of azote .9722, atmospheric air being 1.000. See ATOMIC *Theory*, *Addenda*.

The reasons upon which the above opinion is chiefly founded are, in the first place, the impossibility of accounting on any other than chemical principles for the remarkable uniformity observed in the composition of atmospheric air all over the world. This fact is universally admitted, and no one can adduce even the slightest argument why this uniformity should be explained on principles different from those which govern other definite compounds, as, for example, water.

Secondly, experiment coincides extremely near with the above supposition, perhaps as nearly as it has ever done in any similar example, even in those on which the doctrine of volumes itself was founded by M. Gay Lussac. Those versed in eudiometry, and who know the imperfections of all eudiometrical methods hitherto advanced, will feel little inclined to vouch for the *perfect* accuracy of their results, and to deny the possibility of an error of one *per cent.* Besides, when we reflect how liable the atmosphere is to contaminations of every kind, the chance of such an error is still further increased.

About the same time (November 1815) that the above opinion was advanced by Dr. Prout, a similar opinion was published by Dobereiner, in a paper inserted in Schweigger's Journal. Thomson's Annals of Philosophy, vol. vi. p. 321.

AIR, in *Music*, l. 5, for rhyme *r.* rhythm.

AIR-*Lamp*, col. 2, l. 4, for driven *r.* drive it.

AIR-*Pump*, *Laws of Rarefaction*, &c., col. 4, l. 11 from the bottom, add—Some of the experiments above recited, as having been made in *vacuo*, would only succeed in a very imperfect state of exhaustion, as is evinced from other experiments detailed in the sequel of the article.

AIR,—Experiments for shewing the elasticity or spring of the air, col. 2, exp. 6, add to square phial A, of thin glass. —Miscellaneous experiments, N° 5, l. *ult.*, *r.* it will not be extinguished.

AIR, in *Geography*, a township of Pennsylvania, in the county of Bedford, containing 1179 inhabitants.

AIRY. See AERY.

AITZEMA, l. 2, *r.* Dockum.

AKISKA, in *Geography*, one of the Turkish pachalics of Armenia, which lies near the limits of the Turkish empire, and has the Black sea to the W., Immeritia to the N., Kars and Erzeroom to the S., and Georgia to the E. It extends a considerable way along the banks of the Kur, and contains much arable land, with many cities and villages, and minerals in its mountainous parts. Akalzike (new Castle) or Akiska, which gives name to the province, is the capital: it is a populous and commercial city, without walls or fortifications, and only defended by a ruined citadel, standing in an open valley on the left bank of the Kur, and inhabited by Jews, Turks, Greeks, Armenians, and Georgians.

ALA, in *Botany*, l. 4, for upwards *r.* downwards.

ALANGIUM, so denominated by Lamarck, by a slight alteration of one of its Malabar names, *Alangi*; and if any barbarous generic appellations are to be tolerated, this certainly may.—Lamarck Dict. v. 1. 174. Juss. Gen. 323. Vahl Symb. v. 2. 61. Willd. Sp. Pl. v. 2. 1174. Ait. Hort. Kew. v. 3. 302.—Class and order, *Icosandria Monogynia*. Nat. Ord. *Hesperideæ*, Linn. *Myrti*, Juss.

Gen. Ch. *Cal.* Perianth superior, of one leaf, short, permanent, with from six to ten small erect teeth. *Cor.* Petals from six to ten, linear, undivided, much longer than the calyx into which they are inserted, spiral in the bud, afterwards recurved. Nectary cup-shaped. *Stam.* Filaments ten or twelve, inserted into the calyx, erect, thread-shaped, hairy below, scarcely half the length of the petals; anthers terminal, vertical, linear, obtuse, rather broader and longer than the filaments, bursting at each side longitudinally. *Pist.* Germen turbinate, inferior; style cylindrical, erect, rather longer than the stamens; stigma capitate, lobed, very large. *Peric.* Berry globular, with a rather coriaceous coat, crowned with the calyx, internally fleshy, of one cell. *Seeds* from one to three, nearly lenticular.

Eff. Ch. Calyx superior, with from six to ten teeth. Petals from six to ten. Berry coated, of one cell, with few seeds.

Obs. We do not scruple to remove this genus from the class *Polyandria*, where Willdenow has placed it, but with which the insertion of the stamens does not agree, to *Icosandria*, where it ranges with its natural allies. LEMNISCIA (see

(see that article) answers in habit, and in several characters, to *Alangium*; but its fruit is not sufficiently known to allow of an absolute decision, nor do the anthers agree.

1. A. *decapetalum*. Sage-leaved Alangium. Lamarck n. 1. Willd. n. 1. Ait. n. 1. Vahl Symb. v. 2. 61. (Grewia salvifolia; Linn. Suppl. 409. Angolam; Rheede Hort. Malab. v. 4. 39. t. 17. Arbor indica baccifera, fructu umbilicato rotundo, cerasi magnitudine dicocco; Raii Hist. v. 2. 1497.)—Flowers with ten petals. Branches becoming spinous.—Native of the East Indies. Kœnig sent specimens to Linnæus, and in the year 1779 he also communicated seeds from Ceylon to Kew garden; but their progeny has not yet flowered, if it be still alive. Rheede describes this as a handsome *tree*, an hundred feet high, and twelve in circumference, with spreading branches, white hard wood, and a bitterish, acrid, aromatic bark. The *root* is fungous, reddish, fragrant and bitter, with a yellowish bark. The *branches* bear leaves and flowers together, and finally assume a sharp spinous termination. *Leaves* alternate, on short downy stalks, ovate-oblong, obtuse, entire, ribbed, veiny, four or five inches long, pliant, fragrant; smooth and shining above; paler, reticulated, and roughish, beneath. *Flowers* axillary, either solitary, or two or three together, on simple, short, downy stalks. *Calyx* downy. *Petals* rather silky externally; white within. *Anthers* bright red. *Fruit* the size of a large cherry; downy when young; purplish when ripe, full of sweet fragrant pulp, which is esteemed very delicious, and contains one, two, or three black *seeds*. The inhabitants of Malabar compare the *flowers* to an imperial diadem, and therefore consider this tree as an emblem of royalty. The expressed juice of the root is purgative, and used for expelling intestinal worms. Its powder is thought an antidote for the bites of serpents, and other venomous animals.

2. A. *hexapetalum*. Broad-leaved Alangium. Lamarck n. 2. Willd. n. 2. Vahl Symb. v. 2. 62. (Kara Angolam; Rheede Hort. Malab. v. 4. 55. t. 26. Arbor indica prunifera, fructu umbilicato corticoso persici simili; Raii Hist. v. 2. 1483.)—Flowers with six petals. Branches not spinous.—Native of the coast of Malabar, in stony, sandy, mountainous places, always in flower and leaf. Its trunk is of lofty stature, but inferior to the former. *Leaves* broader, more ovate, and pointed, smooth, bitter and acrid, but not aromatic; paler beneath. *Flowers* smaller, whitish, nearly sessile, with only six *petals*. *Fruit* globose, the size of a small apple, having a thick, downy, purple coat, and viscid acid pulp.

3. A. *tomentosum*. Downy Alangium. Lamarck n. 3.—"Branches scarcely spinous. Leaves oblong, bluntish; their ribs downy beneath, like the footstalks."—Found in the East Indies by Sonnerat. Allied to the first species in the form of its *leaves*, and to the second in the nature of its *fruit*. The *flowers* are unknown. The young shoots, stalks, calyx, and ribs of the leaves, are clothed with short cottony down. *Lamarck*.

AL-ARAF, l. 5, for Alcoran *r.* Koran.

ALASAN, in *Geography*, the *Auxan* of Strabo, a river of Georgia, which separates this province from Shirvan, and taking its rise near that of the Araqui, not far from the gates of Caucasus, pursues a S.E. course, until it meets the Kur or Cyrus at Douhizil. About 30 miles above this place it is joined by the Kabri or Yari, which fertilizes the greatest part of the province of Kaket.

ALBA LONGA, l. 8, for furrowed *r.* farrowed.

ALBANIA, col. 2, l. 5, add—Mr. Hobhouse rates the population of Albania at about 1,200,000 souls.

A L B

ALBANS, ST., a township of America, l. 3, for 256 *r.* 1669.

ALBANY. Add after Saratoga—It is now restricted to an area of 462 square miles, or 295,689 acres. By the census in 1810, its population consisted of 34,661 souls, its senatorial electors were 2971, and the number of slaves was 772.

ALBANY, l. 4. This city and suburbs in 1812 contained about 12,000 inhabitants, 1800 houses and stores, 10 houses for public worship, and several public buildings.

ALBANY, a township of the district of Maine, in the county of Oxford, with 165 inhabitants.

ALBEMARLE, a county of America, &c. contained, in 1810, 18,268 inhabitants, of whom 9226 were slaves.

ALBERT I., l. 9, for between *r.* with. Col. 2, l. 11 from the bottom, for Rhees *r.* Reus, and *dele* near Schaffhausen.

ALBERT'S or *Current Dollar*, with $\frac{1}{2}$ and $\frac{1}{4}$ ditto, Dutch silver coins valued at 50, 25, and $12\frac{1}{2}$ stivers, each about 1 *per cent.* agio. Albert's dollar is also used as a money of account at Riga. See RIX-DOLLAR.

ALBUMEN, in *Chemistry*. Considerable additions have been made to our knowledge respecting this important animal principle since the first volume of the Cyclopædia was published. These we shall briefly notice here.

The first thing deserving to be mentioned is the distinction between *coagulation*, *gelatinization*, and *precipitation*, terms which had been always confounded till Dr. Bostock defined their difference. By *coagulation* is now understood the passing of a substance from a fluid to a solid state by the agency of heat only, or, in some instances, without the immediate co-operation of any external agent; as, for example, in the *coagulation* of the fibrin of the blood. *Gelatinization* is the property which a warm solution of jelly possesses of becoming concrete as it cools. *Precipitation* is the effect which different substances or re-agents produce by combining and forming solid compounds with the principles operated upon.

The next circumstances deserving of notice are the effects of galvanism upon albumen, as ascertained by Mr. Brande.

Mr. Brande found, that when albumen was exposed to the action of a galvanic battery, an apparent coagulation took place at the negative pole, as well as at the positive. The effects of this agent, however, were different, according to its intensity. Thus, with a comparatively high power, the coagulation went on rapidly at the negative pole, and slowly at the positive; whereas, with a very low power, the coagulation was comparatively rapid at the positive pole, while at the negative pole no coagulation took place, the small proportion of albumen being retained in solution by the alkali attracted thither. Dr. Murray, however, who saw these experiments repeated in a general manner by Mr. Ellis, thinks that Mr. Brande was deceived, and that the appearance of coagulation was produced only from the numerous aërial bubbles entangled in the viscid albumen.

The opinion entertained by chemists at present respecting the coagulation of albumen, does not differ much from that of Bucquet, who considered it as a sort of soap, the animal matter being retained in solution by the soda present. An opinion, closely resembling this, has been successively advanced by Dr. Thomson, sir Humphry Davy, and Mr. Brande, who appear to consider this albumen as merely a solution of an animal matter in water and soda, and that all the agents known to coagulate or precipitate it, act by abstracting the soda and water.

The effects of acids and other re-agents upon albumen, although they have been mentioned in a general manner in the

the Cyclopædia, deſerve to be more fully detailed here, as much additional light has been thrown on the ſubject within the laſt few years, from the labours of Berzelius and others.

Acids, as is well known, precipitate albumen immediately; at leaſt this is the caſe with all the mineral acids when concentrated. Dilute phoſphoric, fluoric, and acetic acids, however, do not precipitate albumen. Coagulated albumen, according to Berzelius, is charred by concentrated ſulphuric acid; but when diluted with ſix or ſeven times its weight of water, and digeſted with it, the acid aſſumes a reddiſh colour, but diſſolves ſcarcely any thing. The portion not diſſolved he conſiders as a compound of albumen with exceſs of acid. On depriving it of this exceſs of acid, by waſhing it with pure water, a neutral combination is obtained, which is ſoluble in water. This ſolution reddens litmus paper, and yields a precipitate with acids as well as alkalies, the former being combinations of the albumen with the acid employed, and which may be again rendered ſoluble by waſhing in water, the latter being again ſoluble with a ſlight exceſs of alkali. Hence he conſiders ſulphuric acid to be capable of combining with albumen in two proportions; one in which the acid is neutralized, and which is ſoluble in water; the other, in which the acid is in exceſs, and which is inſoluble in water. In dilute muriatic acid ſcarcely any of the albumen is diſſolved, even by boiling, neither does the acid liquor afford any precipitate with ammonia, or pruſſiate of potaſh. Evaporated to dryneſs, a browniſh reſidue is obtained, from which potaſh diſengages a little ammonia. Concentrated muriatic acid decompoſes albumen by boiling, and produces a red or violet-coloured ſolution. The albumen that has been digeſted in weak muriatic acid, by waſhing repeatedly with water, is converted into a gelatinous maſs, which is perfectly ſoluble in tepid water: this is to be conſidered as a neutral combination of albumen with the acid, while the former one contains an exceſs. The ſolution has the ſame properties nearly as that of ſulphuric acid above-mentioned. Nitric acid of ſp. gr. 1.25, digeſted with albumen, renders it yellow, and diminiſhes its coheſion. The fluid becomes yellow, and a ſmall quantity of fatty matter is formed. During this proceſs, azotic gas is given out in abundance. After twenty-four hours, the albumen is converted into a pulverulent maſs of a pale citron colour, which is depoſited at the bottom. This matter being ſeparated and well waſhed acquires a deep orange colour, which Berzelius conſiders as the *acide jaune* of Fourcroy and Vauquelin, who obtained it by digeſting muſcular fleſh with nitric acid. This is ſoluble in alkaline leys, and imparts to them an orange colour; and it is alſo ſoluble in acetate of potaſh and ſoda. Thus, according to Berzelius, albumen is capable of exiſting with the nitric acid, as well as with the other acids, in two diſtinct ſtates of combination, the one having an exceſs of acid, and of a pale yellow colour, and the other neutral, and of an orange hue. Berzelius ſeems to conſider the different nature of the compounds formed with nitric acid to depend upon the formation of the malic acid, by the action of the nitric acid upon the albumen, which at the ſame time combines with it. Hence, in his opinion, they are triple compounds of albumen, nitric and malic acids. Mr. Hatchett found, that if albumen, after being ſteeped in diluted nitric acid, be waſhed, and then boiled in water, it is diſſolved, and forms a pale yellow liquid, which gelatinizes when properly concentrated, and has all the properties of gelatine. Perhaps this boiling deprives it of the malic acid above-mentioned, or perhaps the malic acid was not formed by the dilute nitric acid; for Berzelius, who ſeems not to have been acquainted with this fact, found alſo, that when albumen was precipitated from its ſolution in acetic acid by the nitric acid, the yellow precipitate was rendered gelatinous by waſhing, and ſoluble in water, like the compounds of albumen with the other acids above-mentioned; all which compounds are probably ſimilar to the above, and which was conſidered by Mr. Hatchett as gelatine. The acetic acid readily diſſolves albumen by the aſſiſtance of heat, firſt converting it, if previouſly coagulated, into a tremulous jelly. The ſolution is colourleſs, and of a mawkiſh and ſlightly acid taſte. When ſufficiently evaporated, it again becomes gelatinous; and when completely exſiccated is a tranſparent maſs which reddens litmus, but is inſoluble both in hot and cold water, without a freſh addition of acetic acid. Ammonia and pruſſiate of potaſh produce from this ſolution in acetic acid a whitiſh precipitate. Alkalies alſo produce a precipitate which is again diſſolved on their being added in ſlight exceſs. Sulphuric, muriatic, and nitric acids produce precipitates, which are compounds of the albumen with the acid employed, the acid being in exceſs; hence, if they are waſhed in water, as before obſerved, they become neutral, and capable of ſolution in water, like gelatine.

Solutions of the different earths, and even ſome of their ſalts, as alum, ſulphate of magneſia, and ſilicated potaſh, were found by Dr. Thomſon to have no effect upon albumen when diſſolved in water, in the proportion of one white of an egg to a pint of water. The caſe, however, was very different with the metallic ſalts and oxyds, moſt of which were found to have a powerful effect upon it, eſpecially the ſulphates, muriates, and nitrates of the metals, while the pruſſiates, and one or two others, had no effect. One of the moſt delicate teſts of albumen, according to Dr. Boſtock, is a ſolution of oxymuriate of mercury: a ſingle drop of this, let fall into water, containing only $\frac{1}{2000}$ parts of its weight of albumen, produces an evident milkineſs, and a curdy precipitate falls. Heat renders the operation of this teſt more effectual. Perhaps the teſt of albumen leaſt liable to ambiguity, is that recommended by Berzelius above-mentioned; namely, the addition of the pruſſiate of potaſh to a ſolution of albumen in acetic acid. Albumen is compoſed of hydrogen, carbon, oxygen, and nitrogen or azote, in the proportions, according to the experiments of Gay Luſſac and Thenard, of

Hydrogen - -	7.540
Carbon - - -	52.883
Oxygen - - -	23.872
Azote - - -	15.705
	100.000

Albumen never exiſts in an abſolutely pure ſtate in animal bodies, but is always combined with other animal matters, and various ſalts. See Blood and *Animal* Fluids.

ALBURGH, in *Geography*, a town of America, in Vermont, and county of Grand Iſle, containing 1106 inhabitants.

ALBUS, in *Commerce*, a ſmall coin and money of account at Caſſel, Cologne, and other places in Germany. The whole principality of Heſſe keeps accounts in rix-dollars of 32 albuſes, ſubdivided into 9 pfenings, or 12 hellers current. A ſpecie rix-dollar is worth 42$\frac{2}{3}$ Heſſian albuſes. Coins in ſilver are, pieces of 8, 5$\frac{1}{3}$, 4, 2$\frac{2}{3}$, and 1$\frac{1}{3}$ albuſes; and in copper, pieces of 1 and 2 albuſes. Cologne keeps accounts in rix-dollars ſpecie of 80 albuſes, or or rix-dollars current of 78 albuses; the albus being reckoned at 12 hellers: and albuses are silver coins.

ALCEDO *Capensis*, l. 2, for short-tailed *r.* long-tailed. A. *rudis*, l. 3, *r.* long-tailed.

ALCEDO. Add—Dr. Shaw has described some other species, and referred some of those above-mentioned to other titles under *Alcedo*, and to *Galbula*. The A. *gigantea* is the *fusca* above-noted: the *afra* is the *maxima:* the *amazona* is glossy-green, white beneath; the sides of the neck white; those of the body variegated with green, and the wing and tail feathers spotted with white; the amazonian K. of Latham, about the size of the belted K., or A. *alcyon:* a native of Cayenne. A. *Malimbica*, sea-green or beryl K. with the throat and belly white; the wing-coverts and streak across the eyes black: is much allied to the A. *capensis* in the form of its belt and distribution of its colours; numerous in Malimba, about the sea-coasts, feeding on worms and fish. A. *javanica*, blue K., with sea-green back, yellowish-white head, neck, and body; the crown of the head streaked with black. (See A. *leucocephala.*) A. *canerophaga*, greenish-blue K., yellowish beneath, with black wing-coverts and eye-stripe, and ferruginous bill; crab-eating K. of Latham: native of Senegal, where it is called Crab-eater. (See A. *Senegalensis.*) A. *Coromanda*, pale-violaceous rose-coloured K., rufescent beneath, with the rump marked by a longitudinal blueish-white band, and white throat: a native of Coromandel, an elegant species. A. *collaris*, blue-green K., white beneath, with white collar; Latham's variety of A. *sacra:* a native of the Philippine islands. A. *bicolor* of Gmelin, referred to A. *inda*. A. *capistrata*, white-collared K. of Latham. (See A. *cærulea* above.) A. *albirostris* referred to GALBULA. A. *cyanocephala*, described under A. *cæruleo-cephala*. A. *tribrachys*, tridigitated K. of Nat. Misc., deep-blue K., ferruginous beneath, with blackish wings and three-toed feet; a native of New Holland: to this the azure K. of Latham is much allied.

ALCINA, in *Botany*, Cavan. Ic. v. 1. 10. t. 15, so named by that author, in memory of Francis Ignatius Alcina, a learned Spanish Jesuit, who resided long in the Philippine islands, and devoting his leisure hours to natural history, left a folio MS., of which Cavanilles speaks as likely to be published. This supposed genus, however, is now sunk in WEDELIA; see that article.

ALCOHOL, in *Chemistry*. A new analysis of alcohol has been lately published by M. de Saussure. He employed for his analysis alcohol of the sp. gr. .8302, at the temperature of 62.8, obtained by rectifying common spirits. This alcohol he considered as a compound of 13.8 water, and 86.2 of the Richter's absolute alcohol; and the water being subtracted from the products obtained, the residue gave the composition of the absolute alcohol of Richter. His method of analysis was to pass the vapour of alcohol through a red-hot porcelain tube, and along a glass tube surrounded by ice nearly six feet in length. The products were carefully collected and weighed. There was a little charcoal deposited in the porcelain tube, and a very little oil in the glass tube. The water obtained amounted to $\frac{1000}{7364}$ of the weak alcohol employed, which was 1256.7 grs., and it contained $\frac{1}{281.5}$ of its weight of absolute alcohol. The combustible gas weighed 912.3 grs., and there was a loss of 55.82 grs. The gas was proved to possess the properties of olefiant gas. Hence it follows that alcohol may be considered as composed of olefiant gas and water; and the result of the analysis was, that the absolute alcohol of Richter is composed of

Hydrogen - - -	13.70
Carbon - - -	51.98
Oxygen - - -	34.32
	100.00

Or the composition may be stated thus:

Olefiant gas - -	61.63
Water - - -	38.37
	100.00

If, with Dr. Thomson, we suppose alcohol to be a compound of one volume of olefiant gas, and one volume of vapour of water, condensed into one volume, its specific gravity in a state of vapour will be just equal to that of these two elastic fluids added together. The specific gravity of these two bodies is,

Olefiant gas - - -	.974
Vapour of water - -	.625
	1.599

And M. Gay Lussac determined by experiment the specific gravity of the vapour of alcohol to be 1.613, which very nearly coincides with the above. Hence there is every reason for presuming that the above is the true composition of alcohol, which, stated more correctly on this supposition, will be as follows:

3 atoms hydrogen -	3.75
2 atoms carbon -	15.
1 atom oxygen -	10.
	28.75

Or *per cent.* of

Hydrogen - - -	13.04
Carbon - - -	52.17
Oxygen - - -	34.79
	100.00

Or,

Olefiant gas - -	60.86
Vapour of water -	39.14
	100.00

See FERMENTATION, *Addenda*.

ALCOHOL *of Sulphur*, now generally termed *sulphuret of carbon*, is a curious compound of sulphur and carbon, first described by Lampadius. See CARBON, and particularly SULPHUR, in the Cyclopædia; where the recent experiments of Berzelius and Dr. Marcet on this substance are detailed.

ALDRICH, col. 2, l. 5, *r.* ascribed to him, but, as some say, erroneously.

ALE, col. 2, l. 28, after parliament, add—The gross duty on ale, or strong beer, is 10*s.* *per* barrel, with an allowance of 10*d.*, so that the nett duty is 9*s.* 2*d.* For table-beer not worth more than 24*s.* the gross duty is 2*s.* *per* barrel, with an allowance of 2*d.*, so that the nett duty is 1*s.* 10*d.*

By 48 Geo. III. c. 143. the several duties imposed upon ale-

ale-licences by former acts were repealed, and a new duty of 2*l.* 2*s.* impofed. All perfons who fhall fell ale or beer by retail, or fhall fell cyder or perry, to be confumed in their houfes or premifes, fhall firft take out an excife-licence, within the limits of the chief office of excife in London, under the hands and feals of two or more of the commiffioners of excife in England, or of fuch perfons as they, or the major part of them, fhall appoint for that purpofe: and in other parts of England, the licences are to be granted under the hands and feals of the feveral collectors and fupervifors of excife within their refpective diftricts. The duration of fuch licences is limited to the 10th of October next enfuing the time of granting thereof. All licences granted at the general licenfing day fhall be made for one year only, to commence on the 29th day of September.

Ale-*Houfes*, l. 4, after houfes, add—under penalty of 3*l.* 6*s.* 8*d.* 5 & 6 Ed. VI. c. 25. 26 Geo. II. c. 31.

L. 9, after cofts, add—But no perfon fhall be liable to the faid penalty, for felling ale or beer in cafks containing not lefs than five gallons, or in bottles, not lefs than two dozen quarts, not to be drank in his houfe, out-houfe, yard, garden, orchard, or other place. 38 Geo. III. c. 54. Penalties may be mitigated for the firft offence; and all penalties fhall be fued for and determined within fix months after the offence committed.

L. 15, after only, add—The day and place for granting licences fhall be appointed by two or more juftices for the divifion, by warrant under their hands and feals, at leaft ten days before fuch meeting, directed to the high conftables, requiring them to order their petty conftables, or other peace officers, to give notice to the feveral inn-keepers and alehoufe-keepers within their refpective conftablewicks, of the day and place of fuch meeting: and all licences granted at any other time and place fhall be void. And no licence fhall be granted to any perfon not licenfed the year preceding, (except in cities or towns corporate,) unlefs he produce a certificate under the hands of the minifter and the major part of the churchwardens and overfeers, or elfe of three or four reputable and fubftantial houfeholders of the place, fetting forth that fuch perfon is of good fame and of fober life and converfation; and it fhall be mentioned in fuch licence that fuch certificate was produced, otherwife the licence fhall be void. No juftice of the peace, being a common brewer of ale or beer, inn-keeper, or diftiller, or a feller of and dealer in ale or fpirituous liquors, or interefted in any of the faid trades, or being a victualler or maltfter, fhall be capable or have any power to grant licences for felling ale or beer, or any other liquors, but the fame fhall be void. All mayors, town-clerks, and other perfons whom it may concern, fhall make out ale-licences duly ftamped before the recognizance be taken; on pain of 10*l.*, half to the king, and half to the profecutor, with cofts. 6 Geo. c. 21. 1 Ann. ftat. 2. c. 22.

L. 18, after tippling, &c. add—1 Jac. c. 9. 1 Ch. c. 4. By 21 Jac. c. 7. innkeepers who fuffer tippling are difabled from keeping an ale-houfe for three years. By 30 Geo. II. c. 24. if any perfon licenfed to fell any forts of liquors, or who fhall fell or fuffer the fame to be fold in his houfe, out-houfe, ground, or apartment thereto belonging, *fhall knowingly fuffer* any gaming with cards, dice, draughts, fhuffle-boards, miffiffippi, or billiard-tables, fkittles, nine-pins, or with any other implement of gaming in his houfe, out-houfe, ground, or apartment thereunto belonging, by any journeymen, labourers, fervants, or apprentices, and fhall be convicted thereof on confeffion, or oath of one witnefs, before one juftice, within fix days after the offence committed; he fhall forfeit for the firft offence 40*s.* and for every other offence 10*l.* by diftrefs by warrant of fuch juftice; three-fourths of which fhall be to the churchwardens for the ufe of the poor, and one-fourth to the informer.

And if any journeyman, labourer, or apprentice, or fervant, *fhall game* in any houfe, out-houfe, ground, or apartment thereto belonging, wherein any liquors fhall be fold, and complaint thereof fhall be made on oath before one juftice where the offence fhall be committed, he fhall iffue his warrant to the conftable or other peace-officer of the place wherein the offence is charged to have been committed, or where the offender fhall refide, to apprehend and carry the offender before fome juftice of the place where the offence fhall be committed, or where the offender fhall refide; and if fuch perfon fhall be convicted thereof by the oath of one witnefs or confeffion, he fhall forfeit not exceeding 20*s.* nor lefs than 5*s.* as the juftice fhall order, every time he fhall fo offend, and be convicted as aforefaid, one-fourth to the informer, and three-fourths to the overfeers for the ufe of the poor; and if he fhall not forthwith pay down the fame, fuch juftice fhall commit him to the houfe of correction, or fome other prifon of the place where he fhall be apprehended, to be kept to hard labour for any time not exceeding one month, or until he fhall pay the forfeiture.

If any perfon (allowing for fome excepted cafes under 1 J. c. 9.) fhall continue drinking or tippling in any inn, victualling-houfe, or ale-houfe, he fhall on conviction thereof before a mayor or juftice of the peace on view, confeffion, or oath of one witnefs, forfeit for every offence 3*s.* 4*d.*, to be paid within one week next after the conviction to the churchwardens, who fhall be accountable for the fame to the ufe of the poor; and if he fhall refufe or neglect to pay the fame, it fhall be levied by diftrefs. And if he be not able to pay the forfeiture, then the mayor, juftice, or court where the conviction fhall be, may punifh the offender, by fetting him in the ftocks for every offence by the fpace of four hours. 1 J. c. 9. 4 J. c. 5. f. 4. 21 J. c. 7. f. 2. 1 C. c. 4.

If any alehoufe-keeper fhall be convicted of the faid offence, he fhall moreover for the fpace of three years be difabled to keep any fuch ale-houfe. 7 J. c. 10. 21 J. c. 7. f. 4.

ALECTORIA, in *Botany*, feems to derive its name from αλεκτωρ, *unmarried*, becaufe nothing has been made out refpecting the male flowers. This is one of the tribe of filamentous Lichens, eftablifhed as a genus by Acharius, (fee Lichenes,) and we fhall endeavour to explain its characters.—Achar. Syn. 291. Lichenogr. t. 13. f. 1—4. Sm. Prodr. Fl. Græc. Sibth. v. 2. 323.—Clafs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eff. Ch. Frond cartilaginous, branched; fpongy within. Shields feffile, thick, bordered, flattifh, of the fubftance of the frond; their difk flightly coloured.

1. A. *jubata*. Wiry Alectoria, or Rock-hair. Achar. n. 1. Prodr. Fl. Græc. n. 1. (Parmelia jubata; Achar. Meth. 272. Lichen jubatus; Linn. Sp. Pl. 1622. Achar. Prodr. 219. Weftring Lich. 183. t. 14. Engl. Bot. t. 1880. Schrad. Journ. v. 1. 83. t. 3. f. 4. Ufnea jubata nigricans; Dill. Mufc. 64. t. 12. f. 7.)

β. Lichen chalybeiformis; Linn. Sp. Pl. 1623. Achar. Prodr. 220. (Ufnea rigida, horfum-vorfum extenfa; Dill. Mufc. 66. t. 13. f. 10. Parmelia jubata δ; Achar. Meth. 273.)

Frond thread-fhaped, fmooth, very much branched, of a fmokya smoky-brown; branches capillary, compressed at their subdivisions. Shields sessile, blackish, with an entire margin; at length convex and rugged. Warts tumid, powdery, white.—Found on the trunks and branches of old trees, especially of the fir kind, throughout Europe, from Lapland to the Bithynian Olympus. *β.* On pales, rocks, and stones. The shields are extremely rare. The older specimens hang in long blackish tufts, like the mane of a horse, from aged trees in mountain forests; the variety *β* grows prostrate and entangled. There is no central fibre, the inside being hollow, or slightly spongy. White powdery *warts* are frequent and conspicuous on the pendulous variety, but these are not now considered by Acharius as having any share in the fructification. The matter has not been decided either way by sufficient experiments. The learned author, whom we have just named, reckons up four more varieties, by the names of *capillaris* (which is *Lichen setiformis* of Ehrhart); *lanestris; cana* (figured by Westring above cited, at his t. 14. f. B.); and *setacea.* These we have not examined. The *cana*, which is hoary, with pale flesh-coloured shields, appears to have some claims to specific distinction.

2. A. *crinalis.* Mane Alectoria. Achar. n. 2. Lichenogr. 594.—"Frond slightly compressed, much branched, greyish, very brittle; branches thread-shaped, roundish towards the upper part. Shields? convex, brown."—Found often mixed with other filamentous Lichens, on the trunks and branches of trees. *Acharius.*

3. A. *usneoides.* Flattened Alectoria, Arabian Usnea. Achar. n. 3. (Parmelia usneoides; Achar. Meth. 270. Lichen Usnea; Linn. Mant. 131. Swartz Ind. Occ. 1912. Usnea ceratoides candicans, glabra et odorata; Dill. Musc. 71. t. 13. f. 14? and certainly t. 84. f. 10.)—Frond compressed, flat, longitudinally striated, much branched, pale and whitish; the branches somewhat fibrous. Shields flat, entire, of the same colour.—On trees in warm countries, in Asia, Africa, and America. Generally pendulous, always spreading, from six to eighteen inches long, linear, flat, cream-coloured, very smooth to the touch; fragrant and musky when fresh; easily splitting when old and dry into two flat layers, exposing a pure white internal powder. The *shields* are very small. By age the whole becomes of a dirty-buff colour. The Arabian physicians used this moss as a cordial, and thought it also procured sleep. See our n. 6.

4. A. *sarmentosa.* Trailing Alectoria. Achar. n. 4. (Parmelia sarmentosa; Achar. Meth. 271. Lichen sarmentosus; Achar. Prodr. 180. New Stockh. Trans. v. 16. 212. t. 8. f. 2. Schrad. Journ. v. 1. 83. t. 3. f. 4. Engl. Bot. t. 2040. L. longissimus, ex cinereo candicans, rugosus et mollior, receptaculis florum rufescentibus; Mich. Gen. 77. t. 39. f. 2. Usnea loris longis dichotomis, extremitatibus tenuioribus; Dill. Musc. 59. t. 11. f. 2. U. dichotoma; Hoffm. Pl. Lich. t. 72.)—Frond roundish, somewhat angular and pitted, much branched, forked and divaricated, whitish; ultimate branches capillary and lax. Shields livid, rather concave, with a pale entire border.—Native of mountainous tracts in various parts of Europe, on trees or rocks. Mr. Borrer and Mr. Hooker met with it on the mountains of Inverness-shire in 1808. The *fronds* are of an ivory white, creeping, widely divaricated, sometimes powdery, hollow; their ultimate branches peculiarly fine and numerous. *Shields*, communicated by Dr. Acharius, small, with a greenish flesh-coloured hollow disk, finally becoming flattened and dilated.

5. A. *thrausta.* Brittle Alectoria. Achar. n. 5. Lichenogr. 596.—"Frond round, somewhat compressed, branched, white; black at the base; branches unequal, zigzag, minutely fibrous and somewhat tendril-like."—Native of France and Switzerland. *Acharius.*

6. A. *arabum.* Arabian Alectoria. Achar. n. 6. Lichenogr. 596. (Usnea ceratoides candicans, glabra et odorata; Dill. Musc. 71. t. 13. f. 14.)—Frond round, somewhat compressed, branched, white; branches forked; the ultimate ones pointed and curved.—Native of the East Indies, St. Helena, and Madagascar. Professor Acharius adopts this from Dillenius without examining a specimen, considering it a distinct species from his *usneoides*, n. 3, with which other botanists have confounded it. He relies also on Dillenius for the present plant being the true *Usnea* of the Arabians. But as Dillenius confounded the two, and had no authority for taking one more than the other for the Arabian *Usnea*, we cannot place any reliance on him in this respect. How far the two plants, so very similar in his figures, are specifically distinct, can only be known by an examination of the specimen of his t. 13. f. 14. at Oxford. The other is sufficiently well known, and was drawn by him from the herbarium of Mr. Charles Du Bois.

7. A. *canariensis.* Canary Alectoria. Achar. n. 7. (Usnea dichotoma compressa, segmentis capillaceis teretibus; Dill. Musc. 72. t. 13. f. 15. Muscus arboreus aurantiacus, staminibus tenuissimis, ex insulis Portunatis; Pluk. Almag. 254. Phyt. t. 309. f. 1.)—Frond compressed, branched, orange-coloured; branches simply or triply forked; their ultimate segments round and capillary.—Native of the Canary islands. Acharius adopts this species entirely from Dillenius, who describes it from a span to a foot in length, compressed, undivided in the lower part, but in the upper copiously and repeatedly branched; the branches occasionally three together, and their summits very fine. The whole is neither very rigid, nor soft, smoothish, of a dull yellow inclining to red. It tinges the saliva with a reddish-orange colour, but has no particular smell.

ALEMBERT, col. 4, l. 28, for Memoires *r.* Membres.

ALEPYRUM, in *Botany*, *α*, *without*, λεπυρον, *a bark, shell*, or *covering*, alluding to the want of corollaceous glumes, by which this genus is distinguished from DEVAUXIA of the same author, to be described in its proper place hereafter.—Brown Prodr. Nov. Holl. v. 1. 253.—Class and order, *Monandria Polygynia.* Nat. Ord. *Restiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of two concave, keeled, permanent valves, clasping each other at the base, containing one or more flowers. *Cor.* none. *Stam.* Filament one, capillary, drooping, about as long as the calyx; anther simple, oval. *Pist.* Germens several, from six to eighteen, ovate-oblong, superior, inserted into one side of a central oblong receptacle, and all turned one way; styles as many, thread-shaped, combined at the bottom, spreading or deflexed at the upper part; stigmas linear, downy. *Peric.* Capsules as many as the germens, membranous, oval, of one valve and one cell, bursting longitudinally at one side. *Seed* solitary, obovate, pendulous.

Eff. Ch. Sheath of two valves. Corolla none. Anther simple. Germens unilateral. Capsules bursting longitudinally at one side. Seed solitary.

A genus of small herbaceous plants, nearly allied to the more numerous one of *Devauxia*, and, in Mr. Brown's own opinion, scarcely to be separated therefrom, the want of petals in *Alepyrum* being the only difference. The three species described by this author are all natives of the south coast of New Holland, where he gathered them himself; nor do they appear to have been met with by any other botanist or collector. The *roots* are fibrous. *Leaves* radical,

cal, fimple, linear-lanceolate, or fetaceous. *Flower-ftalks* radical, unbranched, fingle-flowered.

1. A. *polygonum.* Many-jointed Alepyrum.—Sheath fingle-flowered; the outer valve with a leafy point. Germens from fifteen to eighteen. Stalk twice or thrice the length of the leaves.

2. A. *Pumilio.* Dwarf Alepyrum. — Sheath fingle-flowered; the outer valve with a leafy point. Germens from fix to nine. Stalk the length of the leaves.

3. A. *muticum.* Pointlefs Alepyrum.—Sheath with a few flowers; the outer valve pointed.

ALEXANDER, in *Geography*, a townfhip of Ohio, in the county of Athens, having 765 inhabitants.

ALEXANDRIA, col. 6, l. 24, for Anaftáfius *r.* Anatolius.

Alexandria, a town of New Ruffia, &c. add—Alfo, the principal Ruffian fettlement in the Fox iflands, and the refidence of the governor on the ifland of Kodiak. (See Kodiak and Fox *Iflands.*) The harbour is excellent, and fheltered by feveral fmall iflands lying to the S.W. It confifts of about 50 houfes built of logs, the rooms of which are caulked with mofs, and covered with grafs. This is the principal depôt of the African company, where the furs are collected. This town is named St. Paul by captain Lifianfky. It has a church, a barrack for the Ruffian convicts, a fchool, and feveral ftore-houfes belonging to the N.W. Company. Campbell's Voyage round the World, p. 108.

Alexandria, in Grafton county, &c. for 298 *r.* 409.

Alexandria, in Hunterdon county, &c. for 1503 *r.* 2271; and for 40 *r.* 46.

Alexandria, in Pennfylvania. Add, containing, in 1810, 156 inhabitants.

Alexandria, a town of the diftrict of Columbia, having 7227 inhabitants, of whom 1488 are flaves. The county of the fame name, exclufive of the town, has 1325 inhabitants, including 353 flaves.

ALFORD, l. 2, for 577 *r.* 322.

Alford, a town of America, in the diftrict of Maine and York county, containing 1106 inhabitants.

ALFRED, l. 7, for tenth *r.* fourth.

Alfred, *of Beverley.* Subjoin—See Alred.

ALGEBRA, *Specious*, l. 4 from bottom, for four *r.* three. Col. 2, l. 22, for $+$ *r.* $-$, or $a + b - c - d$. Line 35, for $a + b$ *r.* $a + c$.

ALGOA Bay. Subjoin—By Barrow's chart, Cape Recif in this bay is in S. lat. 34° 10′. E. long. 25° 40′. Variation 26° 40′.

ALIEN. Subjoin—It is alfo continued by the parliament of 1818.

Aliens *Duty.* Add—See Book *of Rates.*

ALKALI, *New fixed*, in *Chemiftry.* See Lithion.

Alkali, *New Compound from Opium.* See Morphia and Opium.

ALKALINE Acrimony, l. 3, for four *r.* four.

ALL Sfugita *r.* Alla *Sfugita.*

ALL Souls, l. *ult.*, for Joxtin *r.* Jortin.

ALLALITE. See Mineralogy, *Addenda.*

ALLANITE. See Mineralogy, *Addenda.*

ALLANTODIA, in *Botany*, from αλλας, αλλαντος, *a faufage*, alluding to the tumid oblong figure of the *Sori*, or lines of capfules, wrapped in their membranous coverings. —Brown Prodr. Nov. Holl. v. 1. 149. — Clafs and order, *Cryptogamia Filices.* Nat. Ord. *Filices.*

Eff. Ch. Fructification in fcattered oblique lines, accompanying a vein. Involucrum vaulted, originating laterally from the vein, and inferted into it by both margins; at length feparating at the inner one.

The habit of this genus, fays Mr. Brown, is between Nephrodium and Diplazium. (See thofe articles.) *Polypodium umbrofum*, Hort. Kew. ed. 1, affords an example of it, and there are fome unpublifhed fpecies. The cylindrical *involucrum* prohibits its union with *Afpidium* or *Athyrium* of various authors, and that membrane, being inferted by both margins into the fame vein, and truly burfting, differs from the *involucrum* of *Afplenium*, whofe upper edge is not connected with the frond.

We felect the examples indicated by the author, not being quite fatisfied of the limits of this genus, which is reduced to *Afpidium* in the fecond edition of Hort. Kew. poffibly not with Mr. Brown's concurrence, his moft indubitable genus of Woodsia (fee that article) being likewife there rejected.

We are poffeffed of many, perhaps of all, the nondefcript *Allantodiæ* of which he fpeaks. To thefe fome other *Afpidia* of Hort. Kew. may be akin; but *A. æmulum*, placed next to *umbrofum*, is not one of them, any more than a few of the neighbouring fpecies, referred by the writer of this article to *Cyathea* in Fl. Brit. whofe *involucrum* furely does not anfwer to the above character, their *fori* being orbicular.

A. *umbrofa.* Madeira Wood Saufage-fern. (Polypodium umbrofum; Ait. Hort. Kew. ed. 1. v. 3. 466. Afpidium umbrofum; ed. 2. v. 5. 513. Willd. Sp. Pl. v. 5. 283. A. axillare; Schkuhr Crypt. t. 61.)—Frond triply pinnate; ultimate fegments lanceolate, decurrent, deeply ferrated; the lower ferratures cloven. Lines contiguous; finally confluent.—Gathered in fhady woods in Madeira, by the late Mr. Maffon, who fent roots to Kew, in 1779, and gave fpecimens to the younger Linnæus. An elegant finely divided *fern*, about three feet high, with roughifh *ftalks.* *Leaflets* two or three inches long, and nearly one broad, pointed, pinnatifid almoft to the mid-rib; the fegments numerous, parallel, oblong, obtufe, decurrent, veiny, fmooth, of a fine green; moft ferrated at their extremity and upper margin; one or two of the lower ferratures often cloven at the point. *Lines* moft copious about the lower part of each leaflet. *Capfules* brown. *Involucrums* pale, varioufly torn and reflexed.

A. *auftralis.* Southern Saufage-fern. Br. n. 1.—Frond doubly pinnate, deltoid, membranous, flaccid. Leaflets pinnatifid, tapering at the point; lobes oblong, obtufe, deeply ferrated, many-flowered. Involucrum oblong.—Native of Van Diemen's ifland.

A. *tenera.* Tender Saufage-fern. Br. n. 2. — Frond doubly pinnate, membranous, flaccid. Leaflets pinnatifid; lobes oblong, obtufe, ferrated, flowering at the bafe. Spots linear.—Gathered by Mr. Brown, in the neighbourhood of Port Jackfon, New South Wales.

The *Afpidium axillare*, Willd. Sp. Pl. v. 5. 273. Ait. ed. 2. v. 5. 512, fhould feem, if the fpecific character of Willdenow were right, to belong to the prefent genus. But we fufpect that character to have been taken from fomething elfe. The *fori* are by no means *recti*, or ftraight, but remarkably recurved, much beyond kidney-fhaped, finally affuming almoft the peltate form of a real *Afpidium.* In an early ftate indeed they are ftraight; but the inner margin is loofe, dilated, and fringed. In habit nothing can be more clofely allied to *Allantodia umbrofa* than this *Afpidium axillare.*

ALLASIA, from αλλας, *a faufage*, or *black-pudding*, in reference to the fhape and colour of the fruit.—Loureir. Cochinch. 84. — Clafs and order, *Tetrandria Monogynia.* Nat. Ord. *Cucurbitaceæ*, Linn. Juff.

Gen. Ch. *Cal.* of one leaf, inferior; tube fhort; limb in five,

five, rather acute, hairy segments. *Cor.* superior, of four small, roundish, concave, very hairy petals. *Stam.* Filaments four, awl-shaped, thick, about the length of the calyx; anthers inverted, two-lobed, each lobe of two cells. *Pist.* *Germen* roundish, between the calyx and corolla; style awl-shaped, the length of the stamens; stigma acute. *Peric.* Berry large, oblong, obtuse, smooth, fleshy, pendulous, of one cell. *Seeds* numerous, ovate, tumid, somewhat compressed, imbedded in pulp.

Eff. Ch. Berry with numerous seeds. Germen between the five-cleft calyx, and corolla of four petals.

1. A. *payos.* Black-pudding tree. *Muringuiringue* of the Africans. — Observed by Loureiro, at Mozambique, near the eastern coast of Africa. A large *tree*, with spreading *branches*, destitute of thorns. *Leaves* opposite, digitate, of five oval, entire, hairy leaflets. *Stalks* many-flowered, nearly terminal. *Fruit* reddish-brown. A cataplasm of the leaves, applied to the back, below the kidneys, is said to promote delivery. Loureiro compares his plant, as to the leaves and fruit, with the *Jaracatia*, Pis. Braf. 160. It is easy to trace the natural order of this *Allasia*, and its relationship to *Carica*. Having seen no specimens, we cannot undertake to correct some apparent inaccuracies, nor to define the real character of the genus; neither is it necessary here to criticise, or to alter, the generic or specific name.

ALLEGANY, in *Geography*, a county of New York, containing 1942 inhabitants, of whom 21 are slaves.

ALLEGHANY, or ALLEGHANY *County*, l. 5, for 10,309 *r.* 25,317, and for 159 *r.* 24.

ALLEGHANY, in Maryland, l. 5, for 4809 *r.* 6909, and for 258 *r.* 620. Add—Also, a township of Pennsylvania, in Cambria county, having 610 inhabitants.—Also, a township of Pennsylvania, in the county of Armstrong, containing 820 inhabitants.—Also, a township of Pennsylvania, in Somerset county, having 271 inhabitants. — Also, a township of Pennsylvania, in the county of Venango, having 299 inhabitants.—Also, a township of Huntingdon county, in Pennsylvania, with 1159 inhabitants.

ALLEN, a township of Pennsylvania, in Cumberland county, having 1837 inhabitants.

ALLENSTOWN, l. 2. for 254 *r.* 346.

ALLEN-TOWN, for 90 houses *r.* 1291 inhabitants.

ALLIGATOR, after LACERTA insert, see LIZARD.

ALLIUM, in *Botany*, an ancient Latin name, of which many different etymologies have been proposed, but none has been thought perfectly satisfactory, is deduced by De Theis from the Celtic, *all*, signifying hot, pungent, or burning, than which nothing can be more suitable, whether we consider the various kinds of Garlic, Onions, &c. in common use, or the numerous wild ones. Several species require to be added to the fifty-seven enumerated by our predecessor, the late Dr. Woodville, in the first volume of this work. (See ALLIUM.) We shall indicate their respective places in each section, interspersing, in the same order, a few remarks concerning other species.

Sect. 1. *Stem leafy. Leaves flat. Umbel bearing capsules only.*

1. A. *Ampeloprasum.* Willd. Sp. Pl. v. 2. 63. n. 1. Engl. Bot. t. 1657. Fl. Græc. t. 312, unpubl. Curt. Mag. t. 1385.

β. Smaller, with sweet-smelling bright crimson flowers.—This variety is a native of the Cape of Good Hope, being the *A. Ampeloprasum* of Thunb. Prodr. 65. It must not be confounded with the *β* of Curt. Mag. 1385, Waldst. and Kitaib. Hung. v. 1. 84. t. 82, which Mr. Ker now thinks a variety of *arenarium*, deprived of its flower-bulbs. The same botanist, so deeply skilled in the plants of this natural order and their allies, has expressed, like Linnæus, an opinion of the real *Ampeloprasum* not being specifically distinct from the garden Leek, *A. Porrum*, n. 2. It seems to us that the simply sheathed biennial *root* of this latter is essentially different from the large, globose, aggregate, perennial *bulbs* of the other; and the keels of the *petals* in *Porrum* are certainly much less rough, if ever at all so, than those of *Ampeloprasum*. A good figure of *A. Porrum* is much wanted.

Between 2 and 3. A. *Dioscoridis.* Sibth. in Prodr. Fl. Græc. n. 764. (μωλυ; Diosc. book 3. chap. 4.)—Found in dense bushy shady situations, in Caria, Mysia, and Cyprus. "The *stem*, in a rich soil, sometimes attains the height of five or six feet. *Umbel* large. *Flowers* white, somewhat resembling those of *Peganum Harmala*, as Dioscorides observes in speaking of the latter plant, book 3. chap. 53." Such is all the information afforded by Dr. Sibthorp's MSS., for he has left no specimen nor drawing of this interesting plant, supposed by him to be the μωλυ, or *Moly*, of Dioscorides. He has not afforded us any materials for a specific character. Can his plant be the A. orientale latifolium, flore magno lacteo; Tourn. Cor. 26? Of this a specimen may perhaps be found, in the collections at Paris or Oxford.

Sect. 2. *Stem leafy. Leaves flat. Umbel accompanied by bulbs.*

Here perhaps ought to have been inserted, on account of its near affinity to *roseum*, our *ambiguum*, figured in Curt. Mag. t. 978, and destined to appear in Fl. Græc. t. 327. See Sect. 4.

Sect. 3. *Stem leafy. Leaves nearly cylindrical. Umbel bearing capsules only.*

20, 21. A. *margaritaceum.* Pearly Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 770. Fl. Græc. t. 315, unpubl.—Stem bearing round leaves and an umbel of capsules. Leaves channelled. Stamens three-pointed, prominent. Petals obovate, obtuse.—Gathered by Dr. Sibthorp, about Prusa in Bithynia, as well as on mount Athos, and in the islands of Naxos, Cyprus, and Cimolis. The *bulb* is about the size of a filberd, coated with brown ribbed scales. *Stem* solitary, a foot high, erect, round, slender, leafy in its lower half. *Leaves* about four, spreading, tapering, as thick as a crow's quill, rather glaucous, smooth, six inches long; channelled along the upper side; sheathing at the base; the two lowermost shorter and soon withering. *Umbel* erect, oval, obtuse, dense, attended at the base by several short, reflexed, jagged, white involucral scales. *Flowers* on slender, ascending or upright, simple *stalks*, an inch long at most. *Petals* obovate, concave, not a quarter of an inch in length, converging, streaked with green, white at the edges, purple at the keel. *Stamens* white; three of them simple, awl-shaped; three linear, with two long, lateral, spreading, narrow segments. *Germen* turbinate, with six prominent angles.

26, 27. A. *caucaseum.* Crimson Caucasian Garlick. Ker in Curt. Mag. at the end of p. 1143. (A. paniculatum; ibid. t. 973, but not t. 1432. A. globosum; Redout. Liliac. t. 179, not t. 96!)—Stem bearing thread-shaped sheathing leaves, and an umbel of capsules. One valve of the sheath elongated and cylindrical. Stamens simple. Petals ovate, acute. Germen globose.—Native of mount Caucasus. Raised by Mr. Loddiges, from seeds imported from Russia. The cylindrical *leaves*, globose *umbel*, shorter *involucrum*, ovate, not obovate *petals*, and round, even, not oblong and channelled, *germen*, as well as the rose-coloured *flowers*, are sufficient marks of distinction between this plant and *A. paniculatum*, of which an imperfect figure, representing the *leaves* as cylindrical (contrary to nature and the description) is given in Curt. Mag. t. 1432.

A. *mar-*

A. *montanum.* Crimson Olympian Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 775. Fl. Græc. t. 319, unpubl. (A. montanum, radice oblongâ; Tourn. Inst. 384, according to Sibthorp.)—Stem bearing nearly cylindrical leaves, and an umbel of capsules. Sheath elongated, deflexed. Stamens simple. Flower-stalks uniform.—Found in the grassy pastures of the Bithynian Olympus, by Dr. Sibthorp. The *bulb* is ovate-oblong, red, with a ribbed angular coat, fibrous at the summit. *Stem* four or five inches high, smooth, round, bearing about two slender, smooth, grass-green *leaves*, a little channelled on their upper side, one of them rising above the *umbel*, which is rather lax. *Petals* obovate, pale rose-coloured with a crimson mid-rib. *Germen* ovate-oblong, with six deep furrows.

A. *staticiforme.* Thrift-like Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 776. Fl. Græc. t. 320, unpubl.—Stem bearing nearly cylindrical leaves, and an umbel of capsules. Stamens simple. Germen three-lobed. Umbel many-flowered, somewhat capitate.—Gathered by Dr. Sibthorp, in the isle of Cimolis. The *bulb* is globular, about the size of a hazel nut, with several lateral offsets. *Stem* a span high, reddish. *Leaves* about three, shorter than the stem, recurved, with striated reddish sheaths. *Umbel* dense, of about an inch and a half in diameter, rose-coloured. *Petals* obovate. *Germen*, as well as the *capsule*, turbinate, abrupt, of three rounded lobes.

A. *pilosum.* Hairy-leaved Crimson Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 777. Fl. Græc. t. 321, unpubl.—Stem bearing nearly cylindrical leaves, and an umbel of capsules. Stamens simple. Leaves and their sheaths very hairy.—Found by Dr. Sibthorp in the island of Cimolis, and we believe in the Peloponnesus also. *Bulb* globular, small, purplish. *Stem* a span high. *Leaves* about four, spreading, tapering, remarkably rough with spreading hairs, as are likewise their long, striated, purplish *sheaths*. *Umbel* lax, hemispherical, many-flowered, smooth, the *flowers* and their *stalks* of a pale purplish crimson. *Petals* elliptic-obovate, obtuse. *Germen* of three hemispherical lobes, not turbinate.

A. *junceum.* Rush-leaved Purple Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 778. Fl. Græc. t. 322, unpubl.—Stem bearing thread-shaped leaves, and an umbel of capsules. Three alternate stamens five-cleft. Umbel capitate. —Discovered in the island of Cyprus, by Dr. Sibthorp, who took it for *A. Schoenoprasum*, from which, however like at first sight, it differs essentially. Our plant is more allied to *A. ascalonicum*, but still distinct, and the *stem* is truly leafy. *Bulbs* aggregate, ovate, with dark-brown, striated, elongated coats. *Stem* a foot high, slender, erect, leafy about one-third of its height. *Leaves* two, nearly as tall as the stem, very slender, tubular, quite round, smooth, a little glaucous, somewhat spreading at the top. *Umbel* globular, dense, its *sheath* of two broad, ovate, acute, concave, close leaves, shorter than the flowers. *Flower-stalks* green, but half the length of the *petals*, which are elliptic-oblong, acute, purplish, with a darker mid-rib. *Stamens* white; three of them simple, awl-shaped; the intermediate ones flat, dilated upwards, terminating in two taper vertical teeth, on each side of a similar one bearing the *anther*. *Germen* elliptical, with three slight furrows.

Sect. 4. *Leaves radical. Common Flower-stalk naked.*

35. A. *inodorum.* Carolina Garlick. Ait. Hort. Kew. ed. 1. v. 1. 427. ed. 2. n. 25. Willd. n. 33. Curt. Mag. t. 1129. (A. fragrans; Venten. Hort. Cels. t. 26. Redout. Liliac. t. 68. Pursh n. 2.)—"Stalk naked, obscurely triangular. Leaves linear, flat; keeled at the back. Umbel level-topped, capsule-bearing. Stamens simple."—On the mountains of Virginia and Carolina, flowering in June. Perennial. *Flowers* white, with red veins. *Pursh*, who had seen it living. It is marked in *Hort. Kew.* as a hardy perennial, flowering in March and April, and introduced by the late Duchess Dowager of Portland, in 1776. We presume Dr. Solander to be the author of the above characters, given in *Hort. Kew*, and that the plant of the Botanical Magazine and that of Redouté are the same, though in the former work the *petals* are obovate, and remarkably elongated at the base; in the latter ovate, without any such elongation. One or other is a great, and very material, error, but not having seen the plant, we know not where the fault lies. There are errors also in the detail of its history. *Redouté t.* 6 for 68; *Venten. Malmais.* copied by Pursh from the Magazine, for *Venten. Hort. Cels.*, which proving that the work was not consulted by Pursh, takes away our confidence in that author, as to synonyms. The name *inodorum* is acknowledged to express the want of the Garlick fœtor in the herbage, while that of *fragrans* alludes to the sweet scent of the *flowers*. We retain the original appellation. Mr. Ker, at the end of the history of t. 1293, in Curt. Mag. declares his conviction that *A. gracile*, our n. 55, is the same plant. We cannot assert the contrary, but we do not feel convinced, and there has been such a diversity of opinion on the subject, that till we can compare living specimens, we must leave the question in doubt. It is remarkable that Willdenow says *A. inodorum* "is like *angulosum* of Linnæus, but twice as large, and differing in the specific character," which chiefly amounts to the *stalk* of the latter being two-edged, and the *leaves* channelled. He had both plants living. But *angulosum* is most excellently represented in Curt. Mag. t. 1149, and surely few of the genus can bear less resemblance to t. 1129! It is scarcely more like Redouté's figures, named *fragrans*. We proceed to notice the species most akin to *inodorum*; for so at least it must be presumed to be.

35, 36. A. *gracile.* Jamaica Garlick. (See our n. 55.) Dryandr. in Ait. Hort. Kew. v. 1. 429. ed. 2. n. 38. Willd. n. 52. Andr. Repos. t. 107. Ker in Curt. Mag. at the end of p. 1293, var. 1. (A. striatum; Redout. Liliac. t. 50. Curt. Mag. t. 1035? and t. 1524?)—"Stalk naked, round, very long. Leaves linear, channelled. Stamens awl-shaped, connected at the base."—Native of Jamaica, from whence it was sent to Kew, by Hinton East, esq., and flowered in the stove, in February. *Aiton. Leaves* a foot long, resembling those of a Narcissus. *Stalk* three feet high, slender. *Petals* erect, white, with claws, which are united with the *stamens* below, into a green tube. Perhaps this plant may form a distinct genus. *Dryander* as above. The writer of the present article happened to be with Mr. Dryander, when the original specimens of this *Allium* were brought from Kew, and on being asked for a name suggested the above. He then obtained a specimen, which is now, along with others gathered at Kew in 1788, in his herbarium, as well as one more, undoubtedly the same species, procured from Mr. Vere's collection, in 1814, as a rare plant, by the name of *A. striatum*. He can therefore speak to the whole *herb* being destitute of the Garlick odour, and to the want of scent in the *flowers*, by day at least, though they may very probably be, as reported, fragrant at night. He can also vouch for the fidelity of Mr. Andrews's figure; nor does he hesitate concerning t. 50 of Redouté; whatever scruples a deference to Mr. Ker may suggest, as to the two figures named *striatum* in Curt. Mag. The suspicion of a generic difference between this plant and *Allium*, arose in Mr. Dryander's mind, from the combination of the *stamens*, and was strengthened by the want of the garlick flavour.

flavour. The *leaves* are certainly not remarkably ſtriated at the back, as in the real *ſtriatum*, of which we ſhall next ſpeak.

A. *ſtriatum*. Streaked-leaved Garlick. (See our n. 37.) Jacq. Coll. v. 5. 51. Ic. Rar. t. 366. Willd. n. 35. Ait. n. 27.—Stalk naked, ſlightly triangular. Leaves linear, ſomewhat channelled; convex, with many furrows, but no keel, beneath. Umbel level-topped. Petals oblong-lanceolate. Stamens ſimple.—Native of the Cape of Good Hope, flowering in the garden in September and October. Whole plant ſmooth, without much ſcent. *Bulb* the ſize of a hazel-nut, white, coated. *Leaves* about four, all radical, ſix inches or more in length, linear, bluntiſh, oblique, but little channelled; rather convex and ſtriated at the back, but not triangular. A tranſverſe ſection, under a magnifier, ſhews a ſingle row of perpendicular tubes, each running behind one of the furrows; but the *leaf* is not itſelf hollow, or tubular. *Stalk* radical, obſcurely triangular, ſlender, erect, as tall as the leaves, or taller. *Umbel* of ſeven *flowers*, more or leſs, the partial ſtalks an inch and a half long. *Sheath* of two erect, ovate, pointed, membranous valves. *Petals* long-lanceolate, rather acute, ſpreading, white with a green longitudinal line in the middle. *Filaments* awl-ſhaped, equal, ſhorter than the petals. *Anthers* oblong, incumbent, yellow. *Jacquin.*

This figure and deſcription ſurely do not ſuit our *gracile*. But whether the *ſtriatum* does really come from the Cape, or from Virginia and Carolina, we are quite in the dark. Purſh's *ſtriatum* is our *ornithogaloides*, n. 57. Curt. Mag. t. 1524 anſwers better to his deſcription than t. 1035, but we cannot prove them the ſame. We have endeavoured to unravel the original materials which concern theſe three ſpecies, but having had no means of comparing freſh ſpecimens, nor having indeed ſeen any at all of Jacquin's plant, we are unable to attempt good ſpecific characters, and therefore leave the whole for future examination, ſatisfied of one thing, at leaſt, that theſe ſpecies are not at preſent well underſtood. To illuſtrate them, great attention to the outline of the *petals*, ſhape and inſertion of the *ſtamens*, and form of the *germen*, circumſtances not yet well obſerved in *Allium*, will be found of primary importance.

39. A. *pedemontanum*. Red Piedmonteſe Garlick. Willd. n. 37. (A. nigrum; Allion. Pedem. v. 2. 158. t. 25. f. 1. A. roſeum; Linn. Sp. Pl. ed. 2. 432, but not Sp. Pl. v. 1. 296.)—Stalk obſcurely quadrangular. Bulb cylindrical. Leaves linear, obtuſe, keeled at the back. Umbel rather denſe, of few flowers. Petals elliptical.—Native of mountainous ſituations in Piedmont. Specimens from Allioni and Bellardi prove this ſpecies, as diſtinct from *nigrum* as from *roſeum*, to have been confounded by Linnæus with the latter, which has a globoſe, very prolific *bulb*, a ſomewhat leafy *ſtem*, and far more numerous, brighter-coloured, *flowers*.

39, 40. A. *ſtellatum*. Miſſouri Garlick. Ker in Curt. Mag. t. 1576. Ait. Epit. 363. (A. anguloſum; Purſh n. 4, excluding the ſynonyms.)—Stalks ſomewhat two-edged, recurved before flowering. Bulb ovate-oblong. Leaves linear, triangular, ſharply keeled. Umbel many-flowered, lax, level-topped. Stamens combined at the baſe. Germen depreſſed, bluntly triangular.—Found on the banks of the Miſſouri, by governor Lewis and Mr. Nuttall, flowering in July, and imported by Mr. Fraſer, in whoſe nurſery it bloomed in June 1813. Purſh by miſtake ſays the *flowers* are white. In the Botanical Magazine they are repreſented of a deep pink, and the herbage ſomewhat glaucous. The *ſtalks* are two or more. The *ſheath* is of only one valve; but Mr. Ker doubts the permanency of that character.

A. *cernuum*. Bowed-umbelled Garlick. "Roth. Nov. Pl. Spec. in Roem. Archiv. n. 3. 40. Catal. Bot. faſc. 2. 33. t. 2." Sims and Kon. Ann. of Bot. v. 2. 27. Ker in Curt. Mag. t. 1324. Ait. Epit. 363.—Stalk angular; recurved at the ſummit. Leaves linear, ſlightly channelled, pointed. Umbel drooping, many-flowered. Stamens ſimple, twice as long as the corolla; tumid at the baſe. Germen turbinate.—Native of mount Caucaſus, according to Mr. Aiton, who ſays it was introduced into England in 1801. The *bulbs* are oblong, tapering, aggregate. *Stalk* eighteen inches high; roundiſh, compreſſed, and recurved, at the top. *Leaves* bright-green, narrow. *Flowers* white, with a delicate roſe-coloured tinge. *Petals* ovate. *Stamens* unequal at firſt, but finally all about twice the length of the corolla. *Germen* three-horned. *Ker.*

A. *rubellum*. Reddiſh Iberian Garlick. Marſch. Taur.-Caucaſ. v. 1. 264.—"Stalk nearly naked, round. Leaves ſemi-cylindrical, channelled. Sheath ſhort. Umbel convex, many-flowered. Stamens ſimple, half as long as the corolla."—Gathered by Mr. Steven in Georgia. *Bulb* the ſize of a filberd. *Stalk* with one or two leaves ſheathing the baſe, on which account the author cited doubts whether this ſpecies and the following might not be referred to the third ſection; but there are many of the fourth whoſe foliage, when the bulb is deep, becomes in ſome degree cauline. *Leaves* a line broad, rather fleſhy. *Flower-ſtalks* ſlender, much longer than the *flowers*, which are hardly ſo big as thoſe of *A. Ampelopraſum*, of a pale purple, with acute *petals*.

A. *ſaxatile*. Stone Garlick. Marſch. Taur.-Caucaſ. v. 1. 264. Sims and Kon. Ann. of Bot. v. 2. 436, excluding the ſynonym of Gmelin.—"Stalk almoſt naked, round. Leaves ſemi-cylindrical. Sheath pointed, longer than the umbel. Stamens ſimple, longer than the corolla." —Frequent on the lime-ſtone rocks of Taurida, flowering in July and Auguſt. *Bulbs* aggregate, oblong, with dark brown coats. *Stalk* with a few ſheathing leaves at the baſe, like the foregoing. *Petals* ſpreading. There is a variety with purpliſh *flowers*, on the eaſtern mountains of Caucaſus. This ſpecies is very cloſely related to *A. ſtellerianum*, Willd. n. 49, ſee our n. 51; but differs in having a long awl-ſhaped *ſheath*. *Marſchall.*

A. *biſulcum*. Jonquil-leaved Garlick. Redout. Liliac. t. 286. Curt. Mag. t. 1381. Ait. Epit. 363.—Bulb cylindrical. Stalk round. Leaves two-ranked, ſemi-cylindrical, channelled, acute. Umbel denſe, convex. Petals oval. Filaments awl-ſhaped, the length of the corolla; three of them broader at the baſe.—Native country not known. The plant is ſaid to be quite hardy, and of eaſy culture, flowering in June and July. Mr. Ker remarks its great reſemblance to *ſeneſcens*, (ſee n. 32,) Curt. Mag. t. 1150, next to which perhaps it ought to be placed, though akin alſo to our laſt, from which the ſhortneſs of the *ſheath* diſtinguiſhes the preſent plant. The narrow and thick *leaves* are very different from *ſeneſcens;* and Redouté has obſerved that the inner ones are channelled on both ſides; which may, as Mr. Ker thinks, be occaſioned by preſſure in an early ſtate.

40, 41. A. *triflorum*. Three-flowered Garlick, or Mountain Leeks. Purſh n. 5.—"Stalk naked, round, ſhorter than the leaves, which are lanceolate and ribbed. Umbel of few flowers."—In ſhady woods, on the high mountains of Pennſylvania, flowering in May and June. Perennial. *Purſh.*

44, 45. A. *lacteum*. Milk-white Garlick. Sm. Prodr.

Fl.

Fl. Græc. Sibth. n. 781. Fl. Græc. t. 325, unpubl. (A. album; Bivona Sic. cent. 1. 16. "Santi Viagg. al Montam. 352. t. 7. Bertol. Gen. 51. Savi Etrufc. v. 2. 210.)—Stalk naked, triangular. Leaves lanceolate, feffile. Petals obtufe.—Native of fields in Italy and Sicily, flowering in March. This is one of thofe plants, which, on account of their novelty, or rarity, Dr. Sibthorp admitted into his *Flora Græca*, having gathered them in the courfe of his travels, though perhaps not in Greece itfelf. *A. lacteum* agrees with *triquetrum*, n. 44, next to which it fhould be placed, in having an acutely triangular *ftalk*; but differs in the lanceolate *leaves*, and fhorter, broader, more obtufe, *petals*. The *ftigma* moreover is fimple, not three-lobed.

A. *ambiguum*. Bulbous Rofe Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 783. Fl. Græc. t. 327, unpubl, (A. rofeum β; Ker in Curt. Mag. t. 978. Bivona Sic. cent. 1. 18. Savi Etrufc. v. 2. 210. "A. carneum; Targioni Tozzetti Ift. Bot. ed. 2. v. 2. 242. t. 6. Moly anguftifolium campanulatum, flore rofeo, nodofum; Cupani Pamph. v. 2. t. 219." Moly ferpentinum vocatum; Lob. Ic. 160.)—Stalk naked. Leaves femi-cylindrical. Stamens fimple, fhorter than the corolla. Umbel bulbiferous.—Native of Italy and Sicily, flowering in May. Frequent about Pifa. *Savi*. On the hills of St. Martino near Palermo. *Bivona*. This *Allium*, which, with refpect to the *Flora Græca*, ftands in the fame predicament as the laft, is made by all authors a variety of *rofeum*; for the difference between the fpecies with bulbiferous, and thofe with feed-bearing, *umbels*, is acknowledged to be, in many inftances, not infallible. In the plant before us, however, there is a great difagreement, as to the character of *rofeum*, which is defcribed with flat *leaves* and a leafy *ftem*. But the dried fpecimens are very much alike, not difcovering in either the femi-cylindrical and hollow ftructure of the *leaves*, fhewn by Dr. Sibthorp's figure. As to the *ftem* being leafy or not, many fpecies are in this refpect ambiguous, and *rofeum* is perhaps improperly confidered as of the former denomination. Their *roots* are precifely alike. The *flowers* of *rofeum* are far more numerous, and of a finer pink hue.

We cannot conclude our furvey of *Allium* without a remark that the whole genus requires to be reformed, with regard to the arrangement of the fpecies, and the fpecific characters of many of them. We are alfo aware of feveral that might be added to the above lift, but of which we want fufficient fpecimens or information clearly to difpofe of them, fo as to elucidate rather than confound the fubject.

ALLOCHROITE. See MINERALOGY, *Addenda*.

ALLOY, in *Chemiftry*, a combination of two or more metals. In addition to what has been faid on this fubject in the Cyclopædia, we may add the following tabular views from Dr. Thomfon, of the general properties of the different alloys, as far as they have been examined. The chemiftry of alloys is at prefent but little underftood, and, as Dr. Thomfon juftly remarks, thefe compounds in general appear to be much better known to artifts and manufacturers than to chemifts.

The firft of the following tables comprehends the alloys of the malleable metals with each other; the fecond, the alloys of the brittle metals; and the third, the alloys of the malleable and brittle metals. In thefe tables, the letter M fignifies *malleable*; B, *brittle*; S, *fubmalleable*, ufed when the alloy is malleable in certain proportions, but brittle in others. O is ufed when the metals do not unite. The fign + is ufed when the alloy occupies a greater bulk than the feparate metals; the fign − when the alloy occupies a fmaller bulk. The firft indicates an expanfion; the fecond, a condenfation.

TABLE I.—Malleable Metals.

	Zinc	Lead	Tin	Nickel	Iron	Copper	Iridium	Potaffium	Sodium	Palladium	Mercury	Silver	Platinum
Lead	M												
Tin	M	M +											
Nickel	O	O	B										
Iron	S	B +	M	M									
Copper	S −	B +	B −	B	S								
Iridium						M							
Potaffium	B	B	B		S								
Sodium	B	B	B										
Palladium		B	B +		B	S −		B					
Mercury	B	B	B	O	B	B		B	B	B			
Silver	B −	B −	B −	O	M	M +	M			M −	B −		
Platinum	B	S −	S −		M −	M −	M			M +	B	M +	
Gold	B −	B +	S −	M +	M +	M +	M			M	B	M +	M +

TABLE II.—Brittle Metals.

	Titanium	Tungften	Chromium	Uranium	Molybdenum	Manganefe	Cobalt	Arfenic	Tellurium	Antimony
Tungften										
Chromium										
Uranium										
Molybdenum										
Manganefe		B			B					
Cobalt					B					
Arfenic					B		B			
Tellurium										
Antimony			B		B	O		B		
Bifmuth			B		S	O	O	B		B

TABLE III.—Malleable and Brittle Metals.

	Bifmuth.	Antimony.	Arfenic.	Cobalt.	Manganefe.	Molybdenum.
Gold - - - - - -	B —	B —	B	B —	M	B
Platinum - - - - - -	B	B	B			B —
Silver - - - - - -	B —	B —	B	B		B
Mercury - - - - - -	B	B	B	O	O	O
Palladium - - - - - -	B —		B			
Rhodium - - - - - -						
Potaffium - - - - - -	B	B	B			
Sodium - - - - - -	B	B	B			
Copper - - - - - -	B —	B —	M		M	S
Iron - - - - - -	B +	B +	B	B	S	B
Nickel - - - - - -	B		B +	B		S
Tin - - - - - - -	M	M ? +	B		B	
Lead - - - - - -	M —	M —	B	B		S
Zinc - - - - - -	O	B +	B	O	O	O

ALMANAC, col. 2, l. 15, add, see STAMP.

ALMUDE, in *Commerce*, a liquid measure in Portugal, &c. (See *Table* XXXII. *of* MEASURES.) At Lisbon, wine and oil are sold by the pipe of 26 almudes; but the pipe of Lisbon wine sent to England contains about 31 almudes, and the standard gauge at the London Custom-house is 140 gallons; the Lisbon almude is therefore reckoned at 4½ English gallons. At Oporto, the pipe is divided into 21 almudes, which almude and its subdivisions are 49⅐ *per cent.* greater than those of Lisbon; so that the standard gauge of a pipe of port at the Custom-house of London is 138 gallons, so that the almude of Oporto is accordingly equal to six English gallons and five pints nearly.

ALNUS, in *Botany*, the Alder, an ancient Latin name, which De Theis derives from the Celtic, *al*, near, and *lan*, the brink of a river, the letters having become transposed for easy pronunciation. This is suitable enough to the tree in question, which always grows near water, even on the loftiest mountains, nor have we met with a better etymology.—Willd. Sp. Pl. v. 4. 334. Sm. Compend. 133. Prodr. Fl. Græc. Sibth. v. 2. 232. Ait. Hort. Kew. v. 5. 258. Pursh 622. Raii Syn. 442. Tourn. t. 359. Gærtn. t. 90. (Betula, as to the character; Linn. Gen. 485. Sm. Fl. Brit. 1011. Engl. Bot. 1508. Lamarck Illustr. t. 760. f. 3. See BETULA.)—Class and order, *Monoecia Tetrandria*. Nat. Ord. *Amentaceæ*, Linn. Juss.

Gen. Ch. Male, *Cal.* Catkin cylindrical, imbricated every way, lax, composed of wedge-shaped, three-flowered, abrupt, three-cleft scales. *Cor.* compound, of three equal, tubular, four-cleft florets, sessile on the disk of each scale; their segments deep, equal, ovate, obtuse, spreading. *Stam.* Filaments four, minute, inserted into the base of each segment, and not quite so long as the segment; anthers of two round lobes.

Female, on the same plant, *Cal.* Catkin elliptical, imbricated, close, consisting of two-flowered, rounded, pointed, obscurely three-cleft, concave scales. *Cor.* none. *Pist.* Germens two to each scale, ovate, minute, depressed; styles two to each germen, tapering, rather longer than the scale; stigmas simple. *Seed.* Nut naked, compressed, of two cells, with solitary kernels.

Ess. Ch. Male, Calyx the scale of a catkin, of one leaf, three-cleft, three-flowered. Corolla deeply four-cleft.

Female, Calyx the scale of a catkin, of one leaf, obscurely three-cleft, two-flowered. Styles two. Nut compressed.

The presence of a *corolla* in the male flowers, with a determinate number of *stamens* equal to that of its segments, are sufficient marks of generic distinction between this genus and *Betula*, which has no *corolla* in either flower, and whose *stamens* are numerous, and indefinite. The fertile *catkin* moreover is elliptical in *Alnus*, cylindrical in *Betula*. Gærtner finds differences in the *seed*, which, if the *germen* be attended to, appear to us less decisive. By an accidental oversight, *Alnus* was neglected to be separated from *Betula*, in our PLANTS OF BRITAIN; see that article.

1. A. *glutinosa*. Common Alder. Gærtn. v. 2. 54. Willd. n. 1. Ait. n. 1. Sm. Compend. n. 1. Pursh n. 1. (Alnus; Matth. Valgr. v. 1. 127. Camer. Epit. 68. Lob. Ic. v. 2. 191. Ger. Em. 1477. Loes. Pruss. 10. t. 1. A. n. 1630; Hall. Hist. v. 2. 300.)

β, incisa; leaves roundish, notched. *Willd.*

γ, laciniata; leaves oblong, pinnatifid, with acute segments. *Willd.* Ait. β.

δ, quercifolia; leaves oblong, sinuated, with obtuse segments. *Willd.*

Leaves roundish-wedgeshaped, obtuse, wavy, glutinous; downy at the branching of the veins beneath.—Native of swamps and the neighbourhood of rivers and pools, in low lands, as well as on mountains, throughout Europe, the north of Asia, and of Africa, as also in Canada and on the north-west coast of America, (*Pursh*,) flowering in March or April. In landscape this tree often supplies the want of the rich dark foliage of the Oak, where the latter will not thrive. The *leaves* are not fully expanded till the end of May, but they remain late in autumn. For the uses and further history of this tree, see BETULA, n. 6. Our γ is the only variety cultivated for ornament, or rather curiosity, in England.

2. A. *oblongata*. Turkey Alder. Willd. n. 2. Ait. n. 2. (A. folio oblongo viridi; Bauh. Pin. 428. Hort. Angl. 5. Betula oblongata; Ait. ed. 1. v. 3. 338.)—Leaves elliptical, bluntish, glutinous; the branching of the veins naked beneath.—Native of the south of Europe. Cultivated in England ever since the year 1730, at least, but not much in request. The *leaves* are smaller than the foregoing, obovate, or elliptic-oblong, sharply serrated. *Catkins* of *seeds* nearly globular.

3. A. *incana*. Hoary Alder. Willd. n. 3. Ait. n. 3. (Alnus; Linn. Fl. Lapp. ed. 1. 260. A. folio incano; Bauh. Pin. 428. A. hirsuta; Bauh. Matth. 133. A. altera; Clus. Hist. v. 1. 12. A. n. 1631; Hall. Hist. v. 2. 301. Betula incana; Linn. Suppl. 417. Ait. ed. 1. v. 3. 339. Ehrh. Arb. 116. Beitr. v. 3. 22. Willd. Arb. 45. B. Alnus β; Linn. Sp. Pl. 1394.)

β, angulata; leaves green beneath, with green footstalks. *Ait.*

γ, pinnata; leaves pinnate, hairy beneath; young branches hairy. *Willd.*

(Betula pinnata; "Lundmark in Stockh. Trans. for 1790, 122. t. 5.")—Leaves elliptic-oblong, acute; downy beneath; the branching of the veins naked. Stipulas lanceolate.—Native of marshes and the banks of rivers throughout Lapland. *Linnæus.* It occurs also in alpine situations, in Germany, Switzerland, &c. The variety γ, of which we have specimens from Dr. Swartz, has been met with in one part of Sweden only, Waermland, and is increased by root only. The *leaves* are small, pinnate, and jagged. The usual appearance of *A. incana*, except its hoariness, and the glaucous hue of the back of its *leaves*, is not very unlike *A. glutinosa*. The *leaves* however are more acute, and their *footstalks* are reddish. This last character, as well as the glaucous hue just mentioned, is wanting in variety β. The general pubescence of the under side of the *leaves* renders it difficult to say how far the veins differ at their origin from those of the Common Alder, but though downy, they certainly want the glandular roughness so remarkable in that species. See BETULA, n. 7, for a further account of this tree.

4. A. *undulata*. Curl-leaved Alder. Willd. n. 4. Ait. n. 4. (A. crispa; Pursh n. 2. Betula crispa; Ait. ed. 1. v. 3. 339. Michaux Boreal.-Amer. v. 2. 181.)—"Leaves oblong, acute; rounded at the base; veins hairy beneath, like the footstalks, but naked at their origin. Stipulas ovate-oblong."—In Canada, and on the high mountains of Pennsylvania, in swamps overrun with Bog-moss, flowering in April. A *shrub*, not above three or four feet high. *Leaves* doubly serrated. *Pursh.* See BETULA n. 13. Willdenow seems to have unwarrantably changed the name of this species.

5. A. *serrulata*. Hasel Alder. Willd. n. 5. Ait. n. 5. Pursh n. 3. (Betula serrulata; Ait. ed. 1. v. 3. 338. Michaux Boreal.-Amer. v. 1. 181. Willd. Arb. 45. Smith Ins. of Georgia v. 2. 183. t. 92. B. rugosa; Ehrh. Beitr. v. 3. 21. "Wangenh. Amer. 86. t. 29. f. 60.")—Leaves obovate,

obovate, finely ferrated; veins and their origin hairy beneath. Stipulas elliptical, obtufe.—Native of North America. Common every where in fwamps, and by river fides, flowering in March. A *fhrub*, from fix to ten feet high, growing in clofe thickets. *Purfh.* See BETULA n. 12. The *leaves* do not appear to be glutinous, or at leaft not fo much fo as the Common Alder, from which alfo they differ in being regularly and finely ferrated, not notched, or jagged.

ALOEXYLUM, ἀλοηξυλον, *Aloes-wood*, a name given to the tree which produces this precious wood, by Loureiro; Fl. Cochinch. 267. See AGALLOCHUM.—He refers it to the Clafs and Order, *Decandria Monogynia*, and its Natural Order feems to be *Lomentaceæ*, Linn. *Leguminofa*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of four acute, hairy, deciduous leaves; the lowermoft falcate, incurved, nearly twice as long as the reft. *Cor.* Petals five, unequal, longer than the calyx. *Stam.* Filaments ten; anthers .... *Pift.* Germen fuperior, elongated, curved, compreffed; ftyle thread-fhaped; ftigma ...... *Peric.* Legume woody, fmooth, falcate. *Seed* folitary, oblong, curved, tunicated.

Eff. Ch. Calyx of four acute deciduous leaves; the lower one longeft. Petals five, unequal. Legume curved. Seed folitary, tunicated.

1. A. *Agallochum.* Fragrant Aloes-wood.—Native of the loftieft mountains of Cochinchina, near the great river which runs between that kingdom and Laofios. A large lofty *tree*, with erect *branches*. *Bark* fibrous, brown, fmooth, not thick. *Leaves* alternate, ftalked, lanceolate, flat, entire, fmooth, rather coriaceous, eight inches long. *Flower-ftalks* terminal, many-flowered. *Loureiro.* This genus is manifeftly different from AQUILARIA. (See that article.) Loureiro defcribes the wood as white and inodorous, becoming refinous and fragrant in confequence of fome injury, till the tree dies. No part of this tree is milky, nor poifonous. He adds, that all the forts of genuine aloes-wood are produced by this tree, even the moft precious, termed *Calambac*, which is found no where but on the mountains of Champávæ, belonging to Cochinchina, fituated about the 13th degree of north latitude. The inferior fpecies, or rather varieties, are obtained in various places, fometimes in pieces weighing thirty pounds or more. "There are," fays Loureiro, "other fragrant woods, called by ignorant perfons *Agallochum*, and *Lignum Aloe*, differing greatly from each other, and the produce of different plants." The common writing paper of Cochinchina is made of the bark of this tree. Yet the plant itfelf feems rare, Loureiro having long enquired in vain for the flowers, and having obtained them but once, in a bruifed and mutilated condition.

Whether the *Agallochum*, or *Calambac*, Rumph. Amboin. v. 2. 29, of which that author gives no figure, be the plant of Loureiro, we cannot pofitively determine, though it feems likely. The *Agallochum fecundarium*, or *Garo*, of the fame volume, 34. t. 10, is certainly the *Aquilaria*. We have received from Dr. Roxburgh fpecimens of the wood itfelf; as well as of the fruit, agreeing exactly with Rumphius's figure, and evidently the *Gyrinops Walla* of Gærtner, v. 2. 276. t. 140. In Tr. of Linn. Soc. v. 11. 230, the writer of this has hinted at the probable affinity of *Aquilaria* to the *Euphorbiæ*.

ALONSOA, a genus eftablifhed by Ruiz and Pavon, Fl. Peruv. Syft. 150, and adopted in Ait. Hort. Kew. v. 4. 27, is founded on two fpecies of HEMIMERIS, (fee that article,) nor can we difcover the leaft poffible character to diftinguifh them from the latter; which having been much confufed in its hiftory by Linnæus, was perhaps not underftood by the authors of the *Flora Peruviana*. Thefe fpecies are our *H. urticifolia*, (Alonfoa incififolia; Fl. Peruv.) and *H. linearis*, (A. linearis of the fame work.) Profeffor Willdenow, though he had never feen more than one *Hemimeris*, the montana, and that in a dried ftate, could not overlook the identity of thefe genera, nor can we account for its having efcaped the learned editors of the Hortus Kewenfis. But it is evident from their generic character of *Alonfoa* that they did not contraft the two genera; for thefe are proved the fame by the character itfelf, which runs thus, and is equally fuitable to both.

Calyx in five deep fegments. Corolla nearly wheel-fhaped, reverfed, five-cleft; the uppermoft fegment largeft. Stamens declining; with fmooth filaments; and converging uniform anthers. Capfule of two cells.

Hemimeris, being a long-eftablifhed Linnæan name, of appropriate and unexceptionable meaning, muft, of courfe, be retained.

ALPINIA, the article already given requires reformation, in confequence of fubfequent difcoveries, chiefly owing to Mr. Rofcoe's inveftigations. (See SCITAMINEÆ and ROSCOEA.) Recurring to the original genus, founded by Plumier, and adopted by Linnæus, as the bafis of the whole, we do not, in quoting various authors, who have followed thefe, confider as *Alpiniæ* all that they have included herein. We fhall limit the characters after Mr. Rofcoe's principles, fo as to exclude what does not belong to this very natural genus, and, on the other hand, to introduce what has, under other names, been improperly feparated from it.—Linn. Gen. 3. Schreb. 4. Willd. Sp. Pl. v. 1. 11. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 3. Rofcoe Tr. of Linn. Soc. v. 8. 343. t. 20. f. 7. Sm. Ex. Bot. v. 2. 93. Roxb. Afiat. Ref. v. 11. diff. 7. Juff. 63. Gærtn. t. 12. (Alpina; Plum. Gen. 26. t. 11. Renealmia; Linn. Suppl. 7. Schreb. 2. Willd. Sp. Pl. v. 1. 6. Mart. Mill. Dict. v. 4. Catimbium; Juff. 62. Zerumbet; Wendl. Sert. Hannov. t. 19. Jacq. Fragm. Bot. 50. t. 68.)—Clafs and order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Cannæ*, Juff.

Gen. Ch. *Cal.* Perianth fuperior, of one leaf, tubular, irregularly fplitting into two or three teeth. *Cor.* of one petal, irregular, tubular at the bafe: limb double, unequal; the outermoft two-lipped, in three deep fegments, of which the upper one is ufually broadeft, and concave, the two lower equal and narrower; innermoft of a fingle lip, ftraight, as long or longer than the outer limb, dilated, lobed, or jagged, at the extremity, furnifhed at the bafe with a pair of awl-fhaped teeth. *Stam.* Filament one, oppofite to the lip, fhort and ftout, quite fimple; anther terminal, erect, thick, fimple, without any appendage, convex at the back, emarginate, divided in front into two parallel, clofe, oblong lobes, burfting longitudinally. *Pift.* Germen inferior, elliptic-oblong, with three furrows; ftyle thread-fhaped, erect, fmooth, the length of the ftamen, embraced by the lobes of the anther; ftigma peltate, umbilicated, hairy. *Peric.* Capfule flefhy, oval, abrupt, umbilicated, with three furrows, three valves, and three cells. *Seeds* numerous, tunicated, ovate, angular, abrupt, inferted into a pulpy receptacle.

Eff. Ch. Anther two-lobed, terminal, embracing the ftyle, without any appendage. Inner limb of the corolla a fimple lip. Capfule flefhy.

Dr. Roxburgh, who had opportunities of ftudying the various fpecies of this, and many other Scitamineous genera, in their native fituations, fpeaks of *Alpinia* as a good natural genus, having, befides the proper characters in the fructification, certain peculiarly ftriking ones in the habit. The *roots* are perennial, tuberous, ftrong, thick, crooked, running nearly horizontally, a little below the furface of the ground, and

and ftrongly marked with annular fcars where former leaves have been; thefe fend down copious, long, thick, fibrous radicles. *Stems* either biennial or perennial, numerous, tufted, ftraight, erect, or more or lefs recurved at the fummit, denfely leafy, each terminating in a copious *clufter*, or *panicle*, of large gaudy *flowers*, "except *Cardamomum*," fays Dr. Roxburgh; but that plant, which has a radical panicle, is now excluded from *Alpinia*, and called by Dr. Maton *Elettaria* in Tr. of Linn. Soc. v. 10. 249, having fufficient marks of generic diftinction in the *ftamen*. We fhall endeavour to collect under one view the numerous fpecies of this fine genus, of which we can find any account, or have feen any figures or fpecimens.

1. A. *racemofa*. Simple-cluftered Alpinia. Linn. Sp. Pl. 2. Willd. n. 1. Ait. n. 1. Rofc. Tr. of Linn. Soc. v. 8. 345. Swartz Obf. 5. (Alpina racemofa alba, cannacori foliis; Plum. Ic. 11. t. 20. Zingiber fylveftre minus, fructu e caulium fummitate exeunte; Sloane Jam. v. 1. 165. t. 105. f. 1.)—Clufter fimple, erect. Outer bracteas lanceolate, longer than the flowers. Calyx bell-fhaped, with three blunt equal fegments. Germen fmooth. —Native of rather mountainous fhady woods in the Weft Indies. Notwithftanding Dr. Swartz's doubts, we have no fcruple refpecting Plumier's fynonym. *Root* branching, flefhy, with the flavour of Ginger; ufed in Jamaica as a poultice for cancers and other fores, according to Sloane, with good fuccefs. *Stem* herbaceous, two or three feet high, round, fmooth, flender, fimple, leafy. *Leaves* alternate, elliptic-lanceolate, entire, fmooth, pointed, a foot long, with narrow fheathing *footftalks* exceeding them in length. *Clufter* terminal, folitary, ftalked, unbranched, fmooth, many-flowered. *Outer bracteas* lanceolate, blood-red; the loweft an inch and a half long, the reft about an inch; *inner* bell-fhaped, containing one or two flowers, fhorter than the calyx, permanent. *Calyx* red, with broad and fhallow teeth. *Corolla* white; tube flender, longer than the calyx; outer limb with three nearly equal, ovate, erect fegments; inner fomewhat heart-fhaped, three-lobed, the middle lobe notched. *Germen* bluntly triangular, quite fmooth, as well as the *capfule*. *Seeds* fhining.

2. A. *Galanga*. Galangale Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 345. Roxb. n. 1. Willd. n. 2. (Maranta Galanga; Linn. Sp. Pl. 3. Swartz Obf. 8. Amomum Galanga; Loureir. Cochinch. 5? Galanga major; Rumph. Amboin. v. 5. 143. t. 63. Dale Pharmac. 276. Ger. Em. 33.)—Clufter compound, erect. Bracteas all lanceolate, fhorter than the flowers. Calyx bell-fhaped, with three rather pointed equal fegments. . Germen flightly downy.—Native of various parts of the Malay Archipelago, communicated by the late Dr. Roxburgh, from the Calcutta garden, where this plant flowered during the hot feafon, and ripened feed, though very rarely, in November. The *root* proved to be the real *Galanga major* of the fhops. The *ftem* is faid to be feven or eight feet high. *Leaves* eighteen or twenty-four inches long, foft to the touch, though fcarcely confpicuoufly downy. *Clufter* large, with very numerous, crowded, fhort, racemofe branches, all downy. *Bracteas* uniform, lanceolate, downy; thofe at the bafe of each principal branch very fmall. *Flowers* white. *Calyx* befprinkled with minute refinous dots. *Corolla* elongated; lip externally downy, cloven at the extremity. "*Capfule* fmall, obovate, fmooth, deep orange-red, not opening fpontaneoufly. *Seeds* only two in each cell, even in the germen, bitter and naufeous, each three-fourths covered with a white tunic." *Roxburgh*. See GALANGAL.

3. A. *occidentalis*. Scaly-cluftered Alpinia. Swartz Ind. Occ. 9. Rofc. Tr. of Linn. Soc. v. 8. 345. Willd. n. 4. Ait. n. 2. (Amomum minus, fcapo veftito, floribus fpicatis; Browne Jam. 113, excluding Sloane's fynonym. Paco-feroza minor multicaulis; Plum. MSS. cum icone.)—Clufter compound, erect, on a fcaly leaflefs ftem. Partial bracteas imbricated, fheathing, dilated, abrupt, hairy. Calyx turbinate, with three broad obtufe fegments. Germen flightly downy.—Native of moift parts of the mountainous woods of Jamaica, flowering all the year, but efpecially in fpring. *Root* knotty and flefhy. *Barren ftems* fix feet high, erect, herbaceous, fimple, leafy. *Leaves* elliptic-lanceolate, acute, very fmooth, attached by a fhort contraction to their fheathing *footftalks*, as in the other fpecies. *Flowering ftems* as tall as the others, round, fmooth, erect, not leafy, but clothed from top to bottom with fheathing, oblong, obtufe fcales, and terminating in a denfe, erect, cylindrical, compound, many-flowered *clufter*, with hairy ftalks. *Flowers* all turned upwards, crowded, their partial ftalks concealed by concave, fheathing, abrupt, partial *bracteas*, while each common ftalk, or branch of the clufter, has at its bafe a very different, lanceolate, acute *bractea*, half its own length. *Calyx* coloured, hairy at the bafe; its fegments fmooth, rounded and obtufe. *Corolla* pale yellow; tube the length of the calyx; lip veiny, cloven at the end. "*Capfule* rather fmall, coriaceous and flefhy, of three valves, red when ripe, pulpy within. *Seeds* yellow, two or three in each cell." *Swartz*. We are indebted to Mr. Lambert for a drawing of this plant, copied from Plumier's fketches at Oxford.

The habit of this fpecies may, at firft fight, feem to invalidate the character of a leafy *ftem*, with terminal *inflorefcence*, attributed to this genus in our introductory remarks. We think however that the difference between this and the others is more apparent than real. The fcales may be confidered as abortive *leaves*, not perfected on the flowering *ftems*, while thofe *ftems* which luxuriate in foliage, do not alfo bear *fructification*. Perhaps the *roots* are more prolific than in other fpecies.

4. A. *Allughas*. Ceylon Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 346. Roxb. n. 2. Ait. n. 3. (Hellenia Allughas; Willd. Sp. Pl. v. 1. 4. Andr. Repof. t. 501. Heritiera Allughas; Retz. Obf. fafc. 6. 1. t. 1.)—Clufter panicled, erect. Calyx bell-fhaped, two-lobed. Germen hairy. Lip two-lobed.—Native of the Eaft Indies. Very common in Bengal, flowering throughout the rainy feafon, and ripening fruit in October and November. We received in 1786 a flower from Kœnig's fpecimen of this plant, fent to profeffor David Van Royen by the name of *Grana Paradifi Zeylanica*. It appears without doubt to be the *Alughas* of Hermann, mentioned, but not afcertained fyftematically, in Linn. Zeyl. 207. n. 449, and it is faid to be the *Mala-infchi-kua*, Rheede Hort. Mal. v. 11. t. 14. The illuftrious fir William Jones has defcribed it, by the Sanfcrit name of *Táraca*, in the Afiatic Refearches, v. 4. 240. The *ftem* is two feet high, fimple, leafy. *Leaves* lanceolate, pointed, fmooth, with long fheaths. *Clufter*, or rather *panicle*, varioufly fubdivided, lax, many-flowered, with denfely downy ftalks. *Bracteas* fmooth, for the moft part very fmall, but thofe under the principal fubdivifions of the inflorefcence are fometimes elongated and lanceolate, and one or two of the lowermoft occafionally become very large and leafy. *Calyx* downy, efpecially at the bafe, remarkable for having only two marginal acute fegments. Segments of the outer limb of the *corolla* oblong, equal, coloured green by Mr. Andrews, crimfon, like the *lip*, in Retzius's plate, but the latter is probably accidental, the author having had no living fpecimen. The *lip* is longer than thofe fegments, and, like them, externally hairy; its two lobes appear to be fometimes cloven. *Stamen* long, with a large *anther*, reddifh as well as the *ftyle*. *Fruit* globofe,

purplifh-purplish-black, with numerous tunicated *feeds*. This fpecies was raifed from feed by A. B. Lambert, efq. at Boyton, in Wiltfhire, where it flowered very finely; but it is faid to have been previoufly fent by Mr. Peter Good to Kew, in 1796.

5. A. *alba*. White Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 346. (Hellenia alba; Willd. Sp. Pl. v. 1. 5. Heritiera alba; Retz. Obf. fafc. 6. 18. Languas vulgare; Kœn. in Retz. Obf. fafc. 3. 64.) — Clufter panicled. Calyx bell-fhaped, three-lobed. Lip two-lobed. Leaves callous and fringed at the margin.—Native of China; cultivated in the Eaft Indies. Kœnig terms this plant *Galanga alba*, and fpeaks of it as in much ufe among the Malays. The *roots* are white, thicker than the thumb. *Stems* taller than a man, tuberous at the bottom, a little drooping at the top. *Leaves* about eighteen inches long, and hardly three broad, two-ranked, fmooth on both fides; their edges callous, whitifh, and rather rough with hairs. Five or fix of the lower *fheaths* are unaccompanied by leaves. *Clufter* oblong, with fmooth ftalks, except the partial ones, which are rather hairy. *Bracteas* lanceolate, acute, rufty-coloured, deciduous. *Calyx* with fnow-white fegments. Outer limb of the *corolla* greenifh-white; lip inverfely heart-fhaped, deeply two-lobed, jagged and crifped at the margin, white, with fine rofe-coloured veins. *Capfule* fcarlet, membranous, rather rigid, ftriated. Kœnig's full and correct defcription of the flower, leaves no doubt as to the genus of this plant, though we have feen no fpecimens.

6. A. *chinenfis*. Chinefe Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 346. (Hellenia chinenfis; Willd. Sp. Pl. v. 1. 5. Heritiera chinenfis; Retz. Obf. fafc. 6. 18. Languas chinenfis; Kœn. in Retz. Obf. fafc. 3. 65.)—Clufter panicled. Calyx bell-fhaped, three-toothed, obtufe. Lip emarginate, finely-toothed. Leaves recurved at the point; membranous, and fringed with fcattered hairs, at the margin.—Native of China? where at leaft it is cultivated, for medical ufe, in gardens. *Root* aromatic, with an acrid burning flavour, white, as thick as the middle finger. *Stems* two or three feet high, a little drooping at the fummit. *Leaves* a fpan long, and two inches or two inches and a half broad, with a white rib and margin. *Clufter* narrow, three or four inches long, its ftalks more or lefs clothed with clofe-preffed hairs. *Calyx* green. *Corolla* yellowifh; the *lip* marked with a broad orange-coloured longitudinal ftripe, and tranfverfe waves of the fame colour, accompanied by four blood-red veins. Fruit a *capfule*. *Kœnig*.

7. A. *aquatica*. Water Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 346. (Hellenia aquatica; Willd. Sp. Pl. v. 1. 5. Heritiera aquatica; Retz. Obf. fafc. 6. 18. Languas aquaticum, l. fylveftre; Kœn. in Retz. Obf. fafc. 3. 67.)—Panicle fomewhat drooping at the top, with forked branches. Calyx bell-fhaped, three-toothed. Lip four-toothed, erect; its lateral teeth with an oblong gland at the bafe, on each fide. — Found in marfhy places, among bufhes, by the fides of rivulets in the Eaft Indies, but not very common. *Roots* numerous, thread-fhaped, white, fending forth runners. *Stem* about four feet in height, leafy, as thick as the finger. *Leaves* oblong, acute, coriaceous, of a beautiful green; rather roughly ftriated on the upper fide; fmooth at the back; the margin befet with minute callous teeth. *Panicle* flender, with two deciduous *bracteas* at the bafe; *flower-ftalks* forked, two-flowered, divaricated, round, fmooth, white, fhorter than the flowers. *Bracteas* two or three, attached to the lower flower-ftalks, linear-lanceolate, concave, membranous, whitifh, deciduous. *Calyx* fmooth, pure white, fometimes fplit at the inner fide. *Corolla* white. *Lip* fmall, brown on the inner fide, rofe-coloured near its union with the filament. *Anther* reddifh, crowned with a fmall, coloured, erect, femi-orbicular membrane. *Berry* oval, fmooth, black. *Seeds* five or more, triangular. *Kœnig*. The membrane crowning the *anther* forms a fmall exception to the generic character, but can hardly invalidate it, or require the eftablifhment of a feparate genus; unlefs the fructification, when examined according to our prefent advanced knowledge, fhould afford other diftinctive marks.

8. A. *malaccenfis*. Malacca Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 345. Roxb. n. 3. (Maranta? malaccenfis; Willd. Sp. Pl. v. 1. 14. Burm. Ind. 2. Galanga malaccenfis; Rumph. Amboin. v. 5. 176. t. 71. f. 1.)—Clufter fimple, erect. Leaves villous beneath. Lip broader than long, toothed, concave, obfcurely three-lobed; lateral lobes incurved. — Native of Chittagong, from whence it was brought to the botanic garden at Calcutta, and flowers there in April and May. "This," fays Dr. Roxburgh, "is the moft ftately and moft beautiful of our Scitamineous plants. The *flowers* are particularly large; the *bracteas*, and exterior limb of the *corolla*, pure, fmooth, lucid white; the large lip variegated with crimfon and yellow." *Stem* from twelve to fifteen feet high, villous. *Leaves* eighteen or twenty inches long, the breadth of five or fix fingers, filky or downy beneath. *Flowers* about twelve, alternate. *Rumphius*, *Burmann*. This has not yet found its way to England, where it would doubtlefs be a great acquifition, as, by the above defcription, it feems to excel the magnificence and beauty of the following.

9. A. *nutans*. Drooping Alpinia. Rofc. Tr. of Linn. Soc. v. 8. 346. Sm. Exot. Bot. v. 2. 93. t. 106. Roxb. n. 4. Ait. n. 4. (Globba nutans; Linn. Mant. 2. 170. Willd. Sp. Pl. v. 1. 153. Redout. Liliac. t. 60. G. fylveftris; Rumph. Amboin. v. 6. 140. t. 62, 63. Renealmia nutans; Andr. Repof. t. 360. Edwards t. 1. Thornt. Illuftr. t. 13. Zerumbet fpeciofum; Wendl. Sert. Hannov. t. 19. Jacq. Fragm. Bot. t. 68.)—Clufter fomewhat compound, drooping. Leaves fmooth on both fides. Lip inflated, crifped. Calyx irregularly toothed, tumid, burfting at one fide.—Native of the interior parts of Bengal. *Roxburgh*. Alfo of Amboyna, and other places. It was introduced into the Englifh ftoves, in 1792, by fir Jofeph Banks, and flowering a few years after, excited the admiration of all beholders. The number of figures of this plant which have been publifhed, prove it a general favourite. The tuberous odorous *root* is fometimes, as Dr. Roxburgh afferts, brought to England for *Galanga major*; fee n. 2. *Stem* from five to eight feet high in India, but with us twelve to eighteen, perennial, erect, as thick as the finger, leafy. *Leaves* a foot long or more, with long fheaths, each fheath crowned with a *ftipula* which is externally filky. The *flower-buds* before they expand are of a fhining white, tinged with rofe-colour, and are enveloped in large, concave, toothed *bracteas* of the fame porcelain-like fplendid whitenefs, all together compofing a denfe pendulous *clufter*, like a bunch of oblong grapes. When the *flowers* open, they difplay the magnificent concave *lip* yellow at the margin, internally variegated and ftreaked with every fhade of crimfon. The *ftamen* and its *anther* are fhort and thick. *Germen* hairy. *Capfule* fpherical, opening at the fides. *Seeds* aromatic, as is likewife the young germen. Linnæus has greatly confounded the hiftory of this plant, with which he had no acquaintance but from the work of Rumphius. Yet he fubfequently cited the fame fynonym and figures under his *Renealmia exaltata*, which is indeed an *Alpinia*, as we fhall prefently fhew, but a widely different fpecies. The

The real genus GLOBBA is totally diſtinct from both; ſee that article.

10. A. *mutica.* Pointleſs Narrow-leaved Alpinia. Roxb. n. 5.—Cluſter erect, compound. Leaves ſhortly ſtalked, linear-lanceolate, poliſhed. Lip three-lobed; without a ſpur at the baſe. Capſule pulpy. Seeds numerous, angular, with an evaneſcent tunic.—Found by Mr. W. Roxburg, the ſon of our ever-lamented Eaſt Indian botaniſt, in the foreſts of Prince of Wales's iſland, from whence being brought to the Calcutta garden, it flowered, more or leſs, during the whole year, but chiefly in the hot ſeaſon, March, April, and May. This is alſo an elegant ſpecies, and holds a middle rank between *nutans* and *calcarata. Roxburgh.*

11. A. *calcarata.* Spurred Narrow-leaved Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 347. Roxb. n. 6. Ait. n. 5. (Renealmia calcarata; Andr. Repoſ. t. 421. Globba erecta; Redout. Liliac. t. 174.)—Cluſter erect, ſomewhat compound. Leaves linear-lanceolate, poliſhed. Lip ovate-oblong, cloven at the point. Segments of the outer limb linear-oblong.—Native of China, from whence it was introduced into the Calcutta garden in 1799, according to Dr. Roxburgh, who communicated the plant to Mr. Lambert. The numerous ſtems are from three to five feet high. *Leaves* narrow, acute, ſmooth. *Cluſter* three or four inches long, downy, rather denſe, the ſtalks, though partly compound, ſome of them bearing two or three flowers, being ſo ſhort that the whole cluſter reſembles a ſpike. *Leaves* twelve or fifteen inches long and one broad, pointed. *Bracteas* elliptical, concave, hardly equal to the *calyx*, which is tubular, white, ſplit half way down at one ſide, and on the other very ſlightly and bluntly notched. Outer limb of the *corolla* pure white, the length of the tube, in three deep, equal, obtuſe, flat, rather narrow ſegments. *Lip* nearly twice as long, concave, but not ſo tumid or inflated as in *A. nutans*; its upper ſide crimſon, beautifully ſtreaked; the extremity flattiſh, ſlightly cloven, more or leſs notched or curled. The baſe of the *lip* being furniſhed, as in *A. nutans* and ſome other ſpecies, with two ſmall ſpurs, or awl-ſhaped appendages on the upper ſide, which are wanting in the laſt, ſeems to have occaſioned the ſpecific name, which is rather calculated to miſlead. Dr. Roxburgh had once an intention of changing it to *ſpicata*, which would not have been more correct, and the above being printed by Andrews, it was ſuffered to remain. *A. anguſtifolia* would have been preferable to either.

12. A. *maculata.* Spotted-leaved Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 347.—"Leaves ovate, ſpotted."—Cultivated in the botanic garden at Liverpool. It is thus mentioned by Mr. Roſcoe, but with a mark of doubt, nor have we met with any further information reſpecting this ſpecies.

13. A. *ſpicata.* Small Spiked Alpinia. Roxb. n. 8.—"Spike oblong, compactly imbricated, with narrow-lanceolate acute bracteas."—Native of Sumatra. Brought by Mr. William Roxburgh, from Bencoolen to the Calcutta garden, in 1803. At the cloſe of the rains of 1808, it bloſſomed for the firſt time, and was then only about two feet high, being the ſmalleſt of the genus ever ſeen by Dr. Roxburgh. This is all the account he has left us of the preſent ſpecies.

14. A. *Renealmia.* Surinam Alpinia. (Renealmia exaltata; Linn. Suppl. 79, excluding the ſynonym of Rumphius, and the account of the ſtem and leaves taken from that author. Willd. Sp. Pl. v. 1. 6. "Neue Bot. Ann. v. 3. 136." Myriſma n. 64; Linn. Pl. Surinam. in Amoen. Acad. v. 8. 251. n. 3, excluding the ſynonym of Merian, t. 54.)—Cluſter lateral, compound. Calyx tubular, irregularly toothed.—Native of Surinam. The hiſtory of this plant is ſo confuſed, that we think it neceſſary to lay before the reader all the original materials. The generic deſcription, Linn. Suppl. 7, and the ſpecific one, p. 79 of the ſame work, beginning at the word *Racemus*, appear to have been made, with ſufficient accuracy and fidelity, from ſpecimens of a cluſter of the *flowers*, and a quantity of the *fruit*, with a *leaf*, ſent in bottles of ſpirits to Linnæus. The former was taken out and dried by Linnæus himſelf, for his herbarium, where it now lies, marked by him *Heliconia*, he having taken this ſpecimen for Merian's t. 54, *Heliconia Bihai*, which it ſomewhat reſembles in general aſpect. The *flowers*, however, when examined, prove theſe plants totally different; but this miſtake of Linnæus accounts for his erroneous reference to Merian. The ſpirits in the bottle of the *fruit* being gone, the latter is alſo dried; but enough remains to ſhew it has been a fleſhy, very fibrous, oval, *capſule*, above an inch long, of three valves, ſtrongly umbilicated, and containing numerous, roundiſh-obovate *ſeeds*, now of a ſhining brown. Their flavour is loſt. A Dutch manuſcript, ſent from Surinam with the collection to which the above belonged, contains the following information. "No. 64 is a ſort of reed, and has upon each ſtalk four ſuch leaves as are here to be ſeen; two uppermoſt next to each other, and then the other two a ſpan under the uppermoſt, and a ſpan between theſe two, downwards to the fruit. The fruit is at firſt red; black when ripe. The ſeed in the fruit taſtes exactly like Cardamom. The ſtalk to which the fruit grows is two feet and a half long, beſet with twenty-five to twenty-ſeven fruits." Such is as literal a tranſlation as we could obtain. It ſeems indubitably to aſcertain the ſituation of the *inflореſcence* to be lateral, and in this point agrees with the following account given by Willdenow, we know not on whoſe authority. "A *tree* twenty feet high. *Leaves* five or ſix feet long, lanceolate, waved at the margin. The *cluſter* originates from the *trunk*, above the root." *Neue Bot. Ann.* as above. If this laſt deſcription really belongs to the Linnæan *Renealmia*, our ideas of the plant are very incomplete. The lateral *inflореſcence* would form a ſtrong preſumptive argument againſt its being an *Alpinia*; but we can aſſert, from a careful examination of one of the *flowers*, immerſed in hot water, and compared with a living flower of *A. nutans*, that their ſtructure agrees exactly, without the leaſt mark of a generic difference, eſpecially the eſſential part of the *anther*. This indeed appears from Linnæus's remarks in the *Supplementum*, without which our hiſtory would be incomplete. We ſhall leave the reader to compare it with the deſcriptions of other ſpecies, only obſerving beforehand that Linnæus conſiders the flower as reverſed, placing the *nectary* uppermoſt.

Suppl. p. 7. RENEALMIA. Eſſ. Ch. *Corolla* three-cleft. *Nectary* oblong. *Calyx* of one leaf. *Anther* ſeſſile, oppoſite to the nectary. *Berry* fleſhy.

Nat. Ch. *Cal.* Perianth ſuperior, tubular, of one leaf, burſting at the top into two or three irregular teeth. *Cor.* of one petal. Tube ſtraight, cylindrical. Limb three-cleft: two upper (properly *under*) ſegments oblong, rounded, equal: lower ſegment ſcarcely longer, channelled, oblong. Nectary united with the tube, aſcending under the upper ſegments, ſtraight, the length of the corolla, oblong, with a tooth at the baſe on each ſide, and a hollow behind; dilated, and bluntly three-lobed, at the extremity. *Stam.* Filament none. Anther ſolitary, inſerted into the mouth of the tube, in the boſom of the lower (*upper*) ſegment of the corolla, oppoſite to the nectary, unconnected, ſtraight, linear,

linear, emarginate, marked with a furrow on the inner fide, its length and breadth equal to the fegment of the corolla. *Pift.* Germen inferior, oblong, obfcurely triangular, fmooth. Style thread-fhaped, very fmooth, erect; the length of the corolla. Stigma peltate, a little flat head, abrupt on the fide towards the nectary, an orifice running into the ftyle. *Peric.* Berry oblong, round, with three furrows, fmooth, flefhy, with an umbilicated termination; three-celled in the centre; the cells foft and membranous. *Seeds* numerous, oblong, abrupt, quadrangular, very fmooth.

P. 79. R. *exaltata.* *Clufter* with alternate, lanceolate, channelled, fmooth, ribbed, deciduous *bracteas.* *Flower-ftalks* in the bofoms of the bracteas, folitary, incurved, depreffed, downy, fhort, each terminating in a *fheath* of one leaf, which burfts at the top, like the calyx, into two or three fegments, to allow the flowers to protrude. Within this fheath is a *flower*, as well as *another two-flowered fheath*, fo that each ftalk bears three flowers. The *calyx* is exactly fimilar to thefe fheaths, infomuch that it would be a fheath, if not feated on the top of the germen. Scarcely any other of the *Scitamineæ* has an anther fo unconnected, and with fo much of the common appearance of that organ. The *fruit* forms a compound pendulous clufter, refembling the fruit of *Momordica Elaterium* in fize and figure; its cortical part thick and flefhy, hot, reddifh; the triangular central cell has foft, juicy, membranous partitions. *Seeds* fmall, very fmooth, black, very like thofe of *Amomum Cardamomum.* The preferved fruit is efteemed by the inhabitants of Surinam.

The following three fpecies are lately added to *Alpinia* by Mr. Rofcoe, from the infpection of fome Chinefe drawings, in the poffeffion of the right honourable lord Stanley, V.P.L.S.

15. A. *pennicellata.* Pencilled Alpinia. Rofc. Tr. of Linn. Soc. v. 11. 280.—Clufter terminal, pendulous. Segments of the outer limb fhort, pointed. Lip emarginate. Leaves lanceolate, fimple at the margin.—Native of China. The *lip* or *nectary* is broad, fimple, emarginate, bright yellow regularly ftreaked with crimfon. *Leaves* regularly nerved. The unfolded *bloffoms* have, like fome other fpecies, the appearance of fine China ware.

16. A. *diffiffa.* Cloven Alpinia. Rofc. ibid.—Clufter inclining. Segments of the outer limb ovate. Lip flat, panduriform. Leaves lanceolate, glaucous beneath. Stamen deeply cloven to the bafe.—Native of China. The margin of the *leaves* is ftrongly nerved. *Lip* broad, bright yellow, with a central rib, from which diverge crimfon ftreaks. The *filament* is deeply cloven, each portion bearing its proper *anther*, (or rather we fhould fay, one lobe of the *anther*,) between which rifes the *ftyle*, perfectly free, and not inclofed in a double anther, as in the reft of the proper *Scitamineæ*. This circumftance is fo peculiar, that Mr. Rofcoe thinks it may poffibly entitle the plant to rank as a new genus; but being in other refpects truly an *Alpinia*, he prefers retaining it here.

17. A. *bracteata.* Bracteated Alpinia. Rofc. ibid. 281.—Panicle loofe. Leaves downy. Lip in three, nearly equal, lobes; fpurred at the bafe.—From the fame country. The *ftem* is jointed, rather fpiral. *Footftalks* of the upper *leaves* uniting with the *bracteas.* *Calyx* concave, ovate. *Nectary* broad, flat, nearly circular, deeply indented at each fide, yellow, with purple rays diverging from its bafe. *Anther* ovate. " Habit rather of a *Coftus* than an *Alpinia*, but the inflorefcence is a loofe *panicle*, not a bracteated *fpike*, and the whole conftruction of the *corolla* feems decifive of the genus." *Rofcoe.*

A. *Cardamomum*, Roxb. n. 7, the valuable Cardamom of the fhops; *Amomum repens* of Sonnerat and other authors, Willd. Sp. Pl. v. 1. 9; is now properly, we believe, removed from *Alpinia*, and propofed by Dr. Maton, Tr. of Linn. Soc. v. 10. 249, as a new genus, diftinguifhed by two tranfverfe proceffes at the top of the filament, and called by him ELETTARIA, under which name we propofe hereafter to treat of this plant.

ALQUIER. Add—The fanega, which is the 15th part of the moyo, is = 4 alquiers = 8 moyos = 16 quarters = 32 outavas = 64 mequias. The alquier meafures 675 French, or 817 Englifh cubic inches; fo that 21 alquiers are nearly = 1 Englifh quarter; or, more correctly, 50 alquiers = 19 Englifh bufhels.

ALSOPHILA, in *Botany*, fo named, we prefume, from ἄλσος, *a grove*, or *foreft*, and φιλέω, *to love*; alluding to the favourite ftation of the beautiful tribe of Tree Ferns, to which this belongs.—Brown Prodr. Nov. Holl. v. 1. 158.—This genus is founded on our *Cyathea afpera*, *C. extenfa* of Swartz, *Polypodium lunulatum* of Forfter, and fome other allied fpecies; but we fcarcely think the deeper fegments of the burfting *involucrum*, or the fituation of the *fori* at the divifion, inftead of the fide, of a vein, can authorize a feparation of thefe from CYATHEA. See that article.

ALSTEAD, in *Geography*, a town of America, in New Hampfhire, and county of Chefhire, having 1694 inhabitants.

ALSTONIA, in *Botany*, received that name from Mr. Brown, in memory of Dr. CHARLES ALSTON, formerly Profeffor of Botany at Edinburgh. (See that article.) The genus originally dedicated to this gentleman, in the Supplement of Linnæus, is now funk in SYMPLOCOS. (See that article, and ALSTONIA.)—Brown Tr. of the Werner. Soc. v. 1. 75.—Clafs and order, *Pentandria Monogynia.* Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juff. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, fmall, in five deep, rather blunt, fegments, permanent. *Cor.* of one petal, falver-fhaped; tube cylindrical, many times longer than the calyx, fomewhat tumid near the top, pervious, deftitute of fcales in the throat or mouth; limb horizontal, in five deep fegments, folding over each other at the bafe, moftly fhorter than the tube. Nectary none. *Stam.* Filaments five, fhort, inferted into the tube, and not reaching to its fummit; anthers lanceolate, unconnected with the ftigma, burfting longitudinally, enclofed within the tube. *Pift.* Germens two, fimple; ftyle folitary, central, thread-fhaped, fwelling at the top; ftigma nearly conical. *Peric.* Follicles two, cylindrical, long, each of one cell and one valve. *Seeds* oblong, peltate, fringed, bearded with long hairs at each end.

Eff. Ch. Corolla falver-fhaped, pervious; limb in five deep oblique fegments. Nectaries none. Anthers lanceolate, within the tube, burfting lengthwife, unconnected with the ftigma. Follicles two, cylindrical. Seeds fringed, bearded at each end.

This genus confifts of *trees*, often of great height, with milky juice. *Leaves* either whorled or oppofite, ribbed, fmooth. *Cymes* terminal, panicled. *Flowers* for the moft part white. *Follicles* generally very long. They grow in the Eaft Indies, the Malay Archipelago, and the Society iflands. *Alftonia* has little affinity to ECHITES, (fee that article,) with which Linnæus would probably not have confounded it, had he examined the fruit, or attended to the figure in the Hort. Malab., of which work indeed he had not a copy. *Brown.*

1. A. *fcholaris.* Tablet Alftonia. Br. n. 1. (Echites fcholaris; Linn. Mant. 53. Willd. Sp. Pl. v. 1. 1241. Lignum fcholare; Rumph. Amboin. v. 2. 246. t. 82. Pala;

Pala; Rheede Hort. Malab. 81. t. 45, not 46.)—Leaves ſeveral in each whorl, obovate-oblong, obtuſe, ribbed, ſurrounded with a marginal vein. Cymes ſtalked. Limb of the corolla but partially bearded. Follicles very long and ſlender.—Native of Malabar and the Molucca iſlands, in ſandy ground, flowering in January. A very tall and ſpreading tree, whoſe wood, Rumphius tells us, is uſed by ſchool-boys in India, as ſlates are with us. The *leaves* are from five to ſeven in each whorl, ſtalked, with numerous, parallel, tranſverſe veins, or ribs. *Cymes* many-flowered, compound, ſpreading, downy. *Flowers* ſmall, about half an inch long, whitiſh, ſweet-ſcented, but oppreſſive to the head. *Corolla* downy on the inſide and out, but not denſely bearded, or ſhaggy, except around the mouth. *Follicles* eighteen inches long, not ſo thick as a wheaten ſtraw. *Seeds* furniſhed at each end with a tuft of very long ſilky hairs.

2. A. *ſpectabilis.* Handſome Alſtonia. Br. n. 2.—"Leaves four in a whorl, elliptic-oblong, ribbed, ſomewhat pointed, without any marginal vein. Cymes ſtalked, ſhorter than the leaves. Limb of the corolla bearded. Follicles very long."—Obſerved by Mr. Brown, in April 1803, in the iſland of Timor, near Coepang, bearing flowers and fruit. Very nearly akin to the foregoing, but diſtinct; not ill-repreſented by Rumphius's plate, t. 82, but his deſcription agrees beſt with *A. ſcholaris*. *Brown.* We would obſerve, that the number of the leaves in this figure agrees beſt with *ſcholaris*, and that the omiſſion of the marginal nerve, ſo little conſpicuous in nature, is rather to be attributed to inaccuracy of the engraver, if not of the draughtſman.

3. A. *venenata.* Poiſonous Alſtonia. Br. n. 3.—Leaves four in a whorl, lanceolate, pointed; tapering at the baſe. Cymes forked. Tube of the corolla ſwelling upwards. Limb beardleſs, ſhorter than the tube. Follicles tapering at each end, ſcarcely ſo long as the leaves.—Native of the Eaſt Indies. *Dr. Roxburgh.* We received a ſpecimen from the Rev. Dr. Rottler, gathered at Nundydroog, March 17, 1806. The *leaves* are crowded towards the ends of the branches, ſtalked, very ſmooth, three inches or more in length. *Flowers* like thoſe of a *Tabernæmontana*, their limb an inch broad, with oblong, oblique, rather blunt than acute ſegments; tube an inch and a half long, inflated in the upper part, very ſmooth, as well as the limb. The *calyx* is a little downy, or fringed. *Flower-ſtalks* quite ſmooth. We have not ſeen the *follicles*.

4. A. *coſtata.* Ribbed Alſtonia. Br. n. 4. (Echites coſtata; Forſt. Prodr. 20, excluding the ſynonym. Willd. Sp. Pl. v. 1. 1240.)—"Leaves oppoſite, elliptic-oblong, pointed, ribbed. Cymes looſe. Segments of the limb lanceolate, beardleſs, longer than the tube. Follicles very long."—Native of the Society iſles. *Forſter.* Gathered by ſir Joſeph Banks in Otaheité and Ulaietea, between the ſummits of hills (called by the natives *Attahé*). *Brown.* We preſume the plant, not the hills. A moderate-ſized *tree.* The *ſeeds* are fringed, but, according to Mr. Brown, the ſilky hairs at each end are not ſo remarkably elongated as in other ſpecies. *Kametti-Valli*, Hort. Malab. v. 9. t. 14, is a climber, having ſhort *follicles*, with winged naked *ſeeds*, and therefore cannot, as Forſter thought, be ſynonymous with this.

ALTAY MOUNTAINS. See ALTAI.

ALTERNANTHERA, in *Botany*, ſo called by Forſkall, from the ſtamens being, as he thought, alternately furniſhed with anthers, and without them.—Forſk. Ægypt.-Arab. 28. Brown Prodr. Nov. Holl. v. 1. 416.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, coloured, pointed, ſpreading, permanent, and finally hardened, ſegments. *Cor.* none. *Stam.* Filaments five, capillary, ſhorter than the calyx, inſerted into a membranous ring, ſurrounding the baſe of the germen, with more or leſs remarkable intermediate teeth; anthers ſimple, oval, of one cell, generally wanting on two or three of the filaments alternately. *Piſt.* Germen ovate, acute; ſtyle very ſhort; ſtigma capitate. *Peric.* Capſule membranous, inverſely kidney-ſhaped, compreſſed, of one valve and one cell, inflated, not burſting, encloſed in the cartilaginous calyx. *Seed* ſolitary, roundiſh, pointed.

Eſſ. Ch. Calyx in five deep ſegments, cartilaginous. Corolla none. Stamens partly imperfect, inſerted into a membranous ring, with intermediate teeth. Anthers ſingle-celled. Stigma capitate. Capſule kidney-ſhaped, of one cell, without valves. Seed ſolitary.

Obſ. Mr. Brown properly retains the name of ILLECEBRUM, (ſee that article,) for *I. verticillatum* and its allies, from which we can ſcarcely ſeparate *I. Paronychia*, &c. He would divide the preſent genus, which agrees very nearly in habit with *Illecebrum*, into two ſections. Theſe we ſhall here adopt, according to his ſuggeſtion, for the diſtribution of the ſpecies.

Sect. 1. *Two of the filaments deprived of anthers. Intermediate teeth very ſhort, or obſolete.*

1. A. *ſeſſilis.* Seſſile-flowered Alternanthera. Forſk. Ægypt.-Arab. 28. (Illecebrum ſeſſile; Linn. Sp. Pl. 300. Mant. 345. Willd. Sp. Pl. v. 1. 1209. Ait. Hort. Kew. v. 2. 61. Vahl Symb. v. 1. 22. Amaranthoides humile maderaſpatanum, capitulis candicantibus, folio molli; Pluk. Phyt. t. 133. f. 1. Amaranthus humilis, foliis oppoſitis, floſculis in alis conglomeratis; Burm. Zeyl. 17. t. 4. f. 2.)—Calyx ſmooth; ſegments ovate, pointed, almoſt twice the length of the capſule. Leaves elliptic-lanceolate, nearly entire, bearded at their inſertion. Stem procumbent, hairy on two oppoſite ſides.—Native of Arabia and the Eaſt Indies. A biennial, or perhaps annual herb, whoſe branching *ſtems* ſpread on the ground, in every direction, to the length of a foot or more, and are leafy, bluntly quadrangular; the oppoſite furrows denſely hairy. *Leaves* oppoſite, ſtalked, ſpreading or reflexed, from one to two inches long, bluntiſh, nearly or quite entire, ſingle-ribbed, ſmooth, bright green, rather fleſhy. *Footſtalks* very ſhort, bearded, and connected by intermediate ſtipulaceous briſtles. *Heads* of *flowers* ſeſſile, axillary, ſolitary, obtuſe, half an inch, more or leſs, in length, white and ſhining, like everlaſting flowers. *Calyx* ſingle-ribbed, ſtrongly keeled, pellucid. *Capſule* broadly heart-ſhaped, finely reticulated. The *leaves* occaſionally vary to an obovate, or ſpatulate figure.

2. A. *denticulata.* Toothed Alternanthera. Br. n. 1.—Calyx ſmooth; ſegments ovate, pointed, almoſt twice the length of the capſule. Leaves narrow-lanceolate, finely toothed, ſmooth; bearded at their inſertion. Stem procumbent, ſmooth.—Gathered by Mr. Brown in the tropical part of New Holland, as well as in New South Wales, and Van Diemen's iſland. We have ſeen no ſpecimen.

3. A. *nodiflora.* Knotty-flowered Alternanthera. Br. n. 2.—Calyx ſmooth; ſegments narrow-lanceolate, pointed, thrice the length of the capſule. Leaves linear-lanceolate, finely toothed, ſmooth; bearded at their inſertion. Stem diffuſe, ſquare, ſmooth; its ultimate branches only downy on two oppoſite ſides.—Diſcovered by Mr. Brown, in the tropical diſtrict of New Holland. Theſe three ſpecies appear to be all nearly allied.

4. A.

4. A. *angustifolia.* Narrow-leaved Alternanthera. Br. n. 3.—Calyx externally woolly; segments ovate, acute, the length of the capsule. Heads nearly globose. Leaves linear, very smooth. Stem erect, angular.—Found by Mr. Brown, in the tropical part of New Holland.

5. A. *nana.* Dwarf Alternanthera. Br. n. 4.—Calyx smooth; segments ovate, slightly pointed, twice the length of the capsule. Leaves obovate-oblong, hairy; tapering at the base. Stem diffuse, hairy.—Found in the same country as the two last, by Mr. Brown.

Sect. 2. *Five of the filaments with perfect anthers; five intermediate ones conspicuous, without any.*

6. A. *Achyrantha.* Creeping Alternanthera. (Illecebrum Achyrantha; Linn. Sp. Pl. 299. Willd. Sp. Pl. v. 1. 1208. Ait. Hort. Kew. v. 2. 61. Achyrantha repens, foliis bliti pallidi; Dill. Elth. 8. t. 7. f. 7.)—Stem creeping. Leaves ovate; densely downy when young. Calyx with somewhat spinous points.—Native of Buenos Ayres, from whence it was sent to Sherard, before the year 1732. We have specimens from the Paris garden. There is reason to doubt whether Linnæus ever saw this species. The *root* is perennial. *Stems* prostrate, from one to two feet long, repeatedly forked, leafy, most hairy at opposite sides, creeping by means of fibrous radicles from their lower joints. *Leaves* stalked, from one to two inches long, entire; nearly smooth, and of a bright green, when full-grown; the young ones covered on both sides with dense, starry, hoary hairs, such as compose the pubescence of the *stem*, and especially of the younger *branches*. *Heads* small, from the forks of the stem, partly stalked, round, of but few *flowers*. *Calyx* brownish-white; segments three-ribbed, unequal, strongly keeled, partly hairy, accompanied as it seems occasionally with smaller smoother scales.

7. A. *polygonoides.* Persicaria-leaved Alternanthera. (Illecebrum polygonoides; Linn. Sp. Pl. 300. Willd. Sp. Pl. v. 1. 1208. Ait. Hort. Kew. v. 1. 61. Herniaria hirsuta repens, ad nodos alternos florida; Browne Jam. 184. Amaranthoides humile curassavicum, foliis polygoni; Herm. Par. 17, with a figure. Sloane Jam. v. 1. 141. t. 86. f. 2. A. marina hirsuta, halimi folio; Plum. Ic. 12. t. 21. f. 2.)—Stem creeping, hairy. Leaves elliptic-lanceolate, tapering at the base, stalked, all smooth. Calyx ovate, single-ribbed, unarmed; hairy at the bottom.—Native of South America. A smaller plant than the preceding, except the *flowers;* with longer, much narrower, *leaves* smooth at every period of their growth, on long stalks. *Calyx* of a brilliant white; its segments ovate, pointed, but not spinous, the mid-rib less prominent than in the foregoing; the base only beset with conspicuous hairs. Plumier's plant scarcely requires to be called a variety. The *stem* indeed is represented more hairy than it appears in our gardens, but it is always more or less so, and the hairs are always simple, not stellated like those of *A. Achyrantha.*

8. A. *ficoidea.* Ribbed Alternanthera. (Illecebrum ficoideum; Linn. Sp. Pl. 300. Willd. Sp. Pl. v. 1. 1208. Gomphrena ficoidea; Linn. Sp. Pl. ed. 1. 225. Jacq. Amer. 88. t. 60. f. 4?)—Stem creeping, smooth. Leaves ovato-lanceolate, tapering at the base, stalked. Calyx lanceolate, unarmed, three-ribbed, hairy at the back.—Native of South America. Cultivated by Linnæus at Upsal. Jacquin's figure more resembles the last, closely according with Browne's specimen, which indeed Dr. Solander, who sent it to Linnæus, marked *Gomphrena ficoidea;* but the latter found it to be his own *Illecebrum polygonoides.* The plant before us, from the Upsal garden, is a truly distinct species, with broader *leaves*, an inch and a half or two inches long, roughish with callous points; a smooth *stem;* and very different *flowers.* The segments of the *calyx* are much narrower, brown at the base, with three strong ribs, and clothed at the back, more than half way up, with prominent hairs; their points are tapering, but not spinous.

Mr. Brown speaks of some American nondescript species, referable to this section. Whether the following be among them we know not, but they appear to be nondescript.

9. A. *villosa.* Woolly-branched Alternanthera.—Stem decumbent, hairy; shaggy at the joints. Leaves obovate, stalked, nearly smooth. Calyx ovate, single-ribbed, smooth. —Sent to Linnæus by Thouin, from the Paris garden, without any mention of its native country. *Stems* above a foot long, with ascending very hairy *branches*, bent at each joint. *Leaves* an inch or more in length, bluntish, dotted, rarely besprinkled with a few long hairs. *Footstalks* accompanied, above their insertion, with very dense stipulary tufts, of long shaggy hairs, jointed, like all those on the stem and foliage. Of the *flowers* we have seen only one small axillary *head*, apparently not come to perfection, but its *glumes* are evidently unlike all the preceding, broadly ovate, even and smooth, acute but not spinous, with a simple mid-rib.

10. A. *echinata.* Prickly-headed Alternanthera.—Stem prostrate, hairy. Leaves roundish-oval, smooth. Calyx spinous-pointed; outer segments lanceolate, elongated, partly three-ribbed, smooth: two inner shorter, gibbous, hairy at the back.—Gathered by Commerson at Monte Video, and sent by Thouin to the younger Linnæus. This remarkable species is among the largest we have seen. The *leaves* indeed are not above an inch long, but they are nearly as much in breadth, tapering at the base, their surface dotted with little points, not hairy. *Heads* sessile, axillary, somewhat aggregate, globose or oblong, pale brown, shining, distinguished by the length and sharp thorns of their three outer *calyx-segments*, one of which is strongly three-ribbed, and by the tufted hairs of the two inner ones, projecting very conspicuously between them.

ALTMICKLIC, in *Commerce*, a Turkish silver coin = 60 paras.

ALTON, in America. Add—The town contains 1279 inhabitants.

ALTUN-KUPRI, or the *Golden Bridge*, a town of Persia, in the pachalic of Bagdad, about the size of Kupri, (which see,) situated on a fine plain, on the northern bank of the Little Zab, 32 farsungs from Mosul.

ALUMINA, in *Chemistry*, an earthy substance, described as elementary, but which sir Humphrey Davy has rendered probable to be a compound of a metallic basis with oxygen. See ALUMINUM *infra.*

We have little to add to the description of alumina, except the curious fact observed by Saussure, that this substance does not give out the peculiar *earthy smell* which has been considered as characteristic of it, except it be mixed with oxyd of iron.

ALUMINA, *Salts of*, the compounds formed by the different acids with alumina. By some accident, the description of most of the salts of alumina has been omitted. We shall therefore take the opportunity of introducing them here.

Nitrate of Alumina. See NITRATE *of Alumina.*

Carbonate of Alumina. The existence of this salt has been usually admitted by chemists. Bergman, however, could not form it artificially, though he allows its existence, because when alum is mixed with an alkaline carbonate, part of the alumina remains in solution till the carbonic acid be driven off. Saussure has more recently shewn, that water saturated with carbonic acid is capable of dissolving alumina, but that this combination is destroyed by simple exposure to the air. Carbonate of alumina, therefore, cannot exist in a dry

dry state. What had formerly been considered as dry carbonate of alumina is a triple compound of alumina, carbonic acid, and the alkali employed in precipitating the alumina.

Phosphate of Alumina. This salt may be formed by saturating phosphoric acid with alumina. According to Fourcroy, who is the only chemist that has examined it, the phosphate of alumina is a tasteless powder, insoluble in water. When dissolved in excess of phosphoric acid, it yields a gritty powder and a gummy solution, which by heat is converted into a transparent glass.

Sulphate of Alumina. See ALUM and SULPHATE *of Alumina.* In addition to what has been said under these articles, we may add the following analysis of alum by Vauquelin, Thenard and Roard, and Berzelius.

	Vauquelin.	Thenard and Roard.	Berzelius.
Sulphuric acid	30.52	26.04	34.23
Alumina -	10.50	12.53	10.86
Potash -	10.40	10.02	9.81
Water -	48.58	51.41	45.00
	100.00	100.00	99.90

The analysis of Berzelius is probably most accurate, and is equivalent to

Sulphate of alumina - - -	36.85
Sulphate of potash - - -	18.15
Water - - - - -	45.00
	100.00

Which nearly coincides, according to Dr. Thomson, with three atoms of sulphate of alumina, one atom of sulphate of potash, and twenty-three atoms of water.

According to the experiments of Thenard and Roard, alum usually contains a little sulphate of iron, and the goodness of its qualities as a mordant in dyeing, according to these chemists, depends entirely upon the proportion of that salt present. The more free it is from it the better. The purest alum examined contained about $\frac{1}{2000}$th part of its weight of sulphate of iron; the impurest about $\frac{1}{1000}$. When freed from sulphate of iron, every species of alum tried acts exactly in the same manner as a mordant.

Sulphite of Alumina. See SULPHITE *of Alumina.*

Borate of Alumina. This salt may be formed by mixing together the solutions of borate of soda and sulphate of alumina. It is said to be scarcely soluble in water.

Arseniate of Alumina. See ARSENIATE *of Alumina.*

Tungstate of Alumina. A white powder insoluble in water.

Acetate of Alumina. See ACETATE *of Alumina.*

Benzoate of Alumina. This salt crystallizes, is soluble in water, and deliquesces on exposure to the air.

Succinate of Alumina. Wenzel states, that this salt crystallizes in prisms, and is easily decomposed by heat.

Camphorate of Alumina. This salt may be formed by heating together newly precipitated alumina and camphoric acid. It is a white powder, of an acid bitterish taste, and slightly astringent. Water dissolves about $\frac{1}{200}$th part of its weight of this salt: it is not soluble in boiling water, but separates as the water cools. Cold alcohol dissolves very little of it; but by the assistance of heat that fluid takes up a considerable quantity, which separates on the cooling of the alcohol. This salt undergoes but little change from the action of the air. Exposed to heat the acid volatilizes; and when the salt is thrown on burning coals it takes fire, and burns with a blue flame.

Suberate of Alumina. This salt does not crystallize. It has a yellowish colour, and always contains an excess of acid. On exposure to the air it attracts moisture. When heated the acid is volatilized, and the alumina left in a state of purity.

Oxalate of Alumina. Oxalic acid readily dissolves alumina, and forms an uncrystallizable deliquescent salt, with excess of acid, of a yellowish colour, and sparingly soluble in alcohol. It is said to be composed of

Oxalic acid and water - -	56
Alumina - - - - -	44
	100

Mellate of Alumina. This salt exists in the form of a white flaky powder.

Tartrate of Alumina. See TARTRATES.

Tartrate of Potash and Alumina. This triple salt may be formed by saturating tartar with alumina. It nearly resembles the last salt. Neither the alkalies nor alkaline carbonates, according to Thenard, produce precipitates in this salt.

Saclactate of Alumina. A white powder, insoluble in water.

Urate of Alumina. A white powder, closely resembling in its appearance the uric acid.

Malate of Alumina. This salt is almost insoluble in water; hence Mr. Chenevix has proposed the malic acid as a means of separating alumina from magnesia.

Sorbate of Alumina. From the experiments of Mr. Donovan, the discoverer of sorbic acid, it appears that this salt has no existence.

Zumate of Alumina. A gummy mass, not altered by exposure to the air.

Gallate of Alumina. According to sir Humphrey Davy, a solution of galls, in which alumina has been diffused, deposits after some time transparent prismatic crystals, which are the super-gallate of alumina. The quantity of alumina they contain is so small as not to disguise the properties of the acid.

Dr. Thomson is disposed to consider the salts of alumina in general as composed of one atom of alumina and one atom of the respective acids, and if this be admitted their composition may be readily ascertained.

With respect to the uses of the salts of alumina, see ALUM, DYEING, MORDANT, TAWING, &c.

ALUMINITE. See MINERALOGY, *Addenda.*

ALUMINUM, in *Chemistry*, the metallic basis of alumina. Sir Humphrey Davy shewed, that when potassium is passed through alumina heated to whiteness, a considerable proportion of it is converted into potash, and grey metallic particles are perceived in the mass, which effervesce in water and air, and are converted into alumina. When a globule of iron is fused by galvanism in contact with moist alumina, it forms an alloy with aluminum, which effervesces slowly in water, and becomes covered with a white powder. These metallic particles Davy considered as the basis of alumina, and in conformity to this view denominated it *aluminum.* The above, however, is all we know at present respecting this metal.

ALYXIA, in *Botany*, (see GYNOPOGON,) which latter will probably give way, as in such a case it ought, being founded in error, to the former. Brown Prodr. Nov. Holl. v. 1. 469.

AMADAN. Add—The present town contains in 10,000 meanly-built houses more than 40,000 inhabitants. It is famous

famous for its manufacture of leather; and it is alſo a mart of commerce between Iſpahan and Bagdad, and between Bagdad and Tekroun. N. lat. 35° 51'. E. long. 48°.

AMADIA. Add—This town does not contain above 600 houſes; but the plain, at the foot of the hill, is covered with dependent villages. It is nominally dependent upon the pacha of Bagdad, but pays him no tribute.

AMANDA, a townſhip of Ohio, in the county of Fairfield, having 836 inhabitants.

AMANITA, in *Botany*, αμανιται, an old Greek name for *Fungi* in general, is uſed by Haller, after Dillenius, for the whole Linnæan genus of AGARICUS, (ſee that article,) or nearly ſo. Perſoon adopts it for ſuch ſpecies only as are furniſhed with a *volva*, which, on that account, he conſiders generically diſtinct.—Perſ. Syn. Fung. 246.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Stalk with a wrapper at the baſe. Head fleſhy. Gills crowded, nearly undivided.

Obſ. The *head* is generally warty, and the *ſtalk* elongated, either naked, or furniſhed with a ring. Perſoon deſcribes ſeventeen ſpecies, partly wrong numbered, all which, being more or leſs remarkable, and ſome of them very much ſo, we ſhall in order enumerate, with the addition of one.

Sect. 1. *Stalk ſurrounded at the baſe with a diſtinct wrapper, but deſtitute of a ring at the top.*

1. A. *livida*. Livid Egg-Agaric. Perſ. Diſp. Meth. 66. (Agaricus plumbeus; Schæff. Fung. v. 4. 37. t. 85, 86. With. Bot. Arr. v. 4. 244. Fl. Dan. t. 1014. A. vaginatus; Bulliard t. 512. f. M, according to Perſoon.)—Head boſſed, flattiſh, ſtriated, livid lead-coloured. Gills white, as well as the long ſtalk.—Not uncommon in autumn, after rain, about the ſkirts of woods, and borders of fields. The *wrapper* burſts irregularly. The *ſtalk* is hollow, and rather long in proportion, about twice the diameter of the *head*, which is protuberant and browniſh in the middle, greyiſh-lead-coloured and ſtriated at the margin. Some individuals are much thicker than others. Schæffer gives a good repreſentation of the various ſtates and forms of this ſpecies. The *head* is ſometimes ſtudded with angular warts, at leaſt when young, as repreſented by Battarra, *Leucomyces gemmatus*, Batt. Fung. Arim. 28. t. 6. f. B. commended highly in Withering; and by Micheli, t. 78. f. 2. Theſe figures exhibit a ſtate and habit of the plant, the reverſe of what appears in the *Fl. Dan.* and eſpecially in Bulliard. This is generally allowed to be a poiſonous fungus. Some varieties are indicated by Perſoon, one with yellowiſh gills, Schæff. t. 244; and another with a browner *head*, and tapering *ſtalk*, found in fir woods, which ſeems to connect the preſent with the following ſpecies.

2. A. *ſpadicea*. Tawny-brown Egg-Agaric. Perſ. Diſp. Meth. 66. (Agaricus badius; Schæff. Fung. v. 4. 63. t. 245. With. v. 4. 227. A. fulvus; ib. t. 95. A. vaginatus; Bulliard t. 512, f. N?)—Head ſomewhat bell-ſhaped, boſſed, ſtriated, brittle, orange-brown. Gills white. Stalk pale brown, ſcaly.—Found in dry woods, about Auguſt, in various parts of England and Germany. Akin to the foregoing, but much more delicate in texture. We ſhould ſcarcely think it more than a variety.

3. A. *incarnata*. Fleſh-coloured Egg-Agaric. Perſ. n. 3. ("Agaricus incarnatus; Batſch. Elench. Fung. 51." Fungus magnus eſculentus; e volvâ erumpens, pileolo villoſo albo, lamellis carneis, pediculo cylindrico glabro, pariter albo; Mich. Gen. 182. t. 76. f. 1; not f. 2 as Perſoon has it.)—Head hemiſpherical, white, hairy. Gills fleſh-coloured. Stalk white, cylindrical.—Found by Micheli, on old half-decayed trees, in the woods of Viareggio near Florence, in June. No other botaniſt ſeems to have met with this fungus, at leaſt not in the ſtate deſcribed by Micheli. He repreſents it of very large dimenſions, the *head* full ſix inches broad, while in its convex ſtate, and covered with fine hairs. *Wrapper* much divided and jagged, tumid. *Stalk* ſix inches high, ſmooth, thick, and very ſtraight.

Albertini and Schweiniz, in their very learned *Conſpectus Fungorum*, 142, ſpeak of what they deem a variety of this, whoſe head is ſmooth, ſcarcely bearing any minute fibres or ſcales, by no means hairy or ſhaggy. Every other part agrees with Micheli's account. The undiſplayed *gills* are white, ſoon aſſuming a roſy fleſh-colour from the ſeminal powder. *Head* never becoming quite flat; the border neither furrowed nor ſtriated.

4. A. *virgata*. Striped Egg-Agaric. Perſ. Diſp. Meth. 18 and 66. (Agaricus volvaceus; Bulliard t. 262. Sowerb. Fung. t. 1. With. v. 4. 286. Relh. Cant. 507. A. latus; With. v. 4. 231?)—Aggregate. Head conical-bellſhaped, ſomewhat hairy, grey ſtreaked with black. Gills reddiſh-cinnamon-coloured.—This occurs chiefly on the rotten tan of hot-beds, in ſummer. The *ſtalk* is often a foot high, ſlender in proportion, of a dirty white, burſting from a large pale-olive wrapper. *Head* about three inches broad, ſplitting into ſeveral unequal portions. Perſoon eſteems Schæffer's *Agaricus bombycinus*, t. 98, as perhaps a mere variety of the above, with a yellowiſh *wrapper*, and a ſhaggy-coated *head*. Dr. Withering diſtinguiſhes between the plants of Bulliard and Sowerby. The latter is certainly Relhau's.

5. A. *puſilla*. Small Egg-Agaric. Perſ. Obſ. Mycol. v. 2. 36. t. 4. f. 4, 5. (Agaricus volvaceus minor; Bull. t. 330, not 530.)—Head hemiſpherical, boſſed, pellucid, of a pearly white, ſomewhat cottony. Gills fleſh-coloured. Stalk white, rather longer than the breadth of the head.—Native of gardens and woods in autumn, in a ſouthern expoſure. *Bulliard*. We have not heard of this ſpecies in Britain. Its appearance is elegant and delicate. *Head* an inch, or inch and a half, in diameter. *Wrapper* turbinate, much divided, permanent.

Sect. 2. *Stalk proceeding from a lax wrapper, and furniſhed at the upper part with a ring.*

6. A. *verna*. Vernal Egg-Agaric. Lamarck Dict. v. 1. 113. Perſ. n. 6. (Agaricus bulboſus vernus; Bulliard t. 108. Fungus totus candidus, pileolo ampliore, glutine limacino infecto, pediculo tenuiori cylindrico, annulo ſtrictiori cincto; Mich. Gen. 171? at the ſuggeſtion of Lamarck.)—Pure white in every part. Head at length concave, ſomewhat funnel-ſhaped. Ring pendulous. Stalk elongated, ſolid, cylindrical.—Common in woods in France during the ſpring. Bulliard ſays many perſons have died from eating this fungus by miſtake for the white-gilled variety of the Common Muſhroom. It may be kept in the mouth for eight or ten minutes, before its acrimony, reſembling pepper, becomes perceptible. If the *wrapper* at the baſe be attended to, the plant can never be confounded with any eatable Agaric.

7. A. *porphyria*. Purple Egg-Agaric. Albert. and Schwein. Conſp. 142. n. 401. t. 11. f. 1.—Head convex, naked, ſmooth, of a livid purpliſh-brown. Ring nearly of the ſame colour. Gills and ſtalk white.—Not rare in moiſt, turfy, moſſy ſpots, in fir woods more eſpecially, over which it is ſcattered in September and October. Habit of *A. viridis*, n. 9, but only half the ſize. *Stalk* three or four inches high, too dark-coloured in the figure. *Head* almoſt as much in breadth, never found with warts; very rarely and ſlightly ſtriated at the margin.

8. A. *bulboſa*. White Bulbous Egg-Agaric. Perſ. n. 7. Albert.

Albert. and Schw. Consp. 143. (Agaricus bulbosus; Schæff. Fung. v. 4. 61. t. 241. With. v. 4. 217. A. ovoides albus; Bulliard t. 364. Leucomyces speciosior; Battar. Arim. 28. t. 6. f. A.)—White in every part. Head convex. Stalk elongated, tapering; bulbous at the base. —Frequent from spring to the end of autumn, in rich soil, in woods, gardens, about hot-beds, &c. Its size is considerable. Bulliard speaks of his plant as having a very agreeable flavour, and therefore we presume it to be one of the eatable *fungi*. In the south of France it is known by the name of *Agaric oronge blanche*, to distinguish it from the *A. oronge vrai*: see n. 11. The bulbous base of the nearly solid *stalk* is a characteristic mark. The *ring* is broad, loosely pendulous, permanent. *Head* almost hemispherical, rarely with a slightly indicated boss. Schæffer's plate is too much coloured. The *gills*, if not absolutely white, are semi-pellucid, or watery, in their appearance.

9. A. *citrina*. Lemon-coloured Egg-Agaric. Perf. n. 8, not 7. Disp. Meth. 66. Albert. and Schwein. Consp. 143. (Agaricus citrinus; Schæff. Fung. v. 4. 11. t. 20.)—Head smooth, convex, lemon-coloured. Stalk and gills white.—This is described as not unfrequent on the continent, in beech or oak woods, where the ground is sandy. Whether it be found in England, we are doubtful. Mr. Sowerby has exhibited in his t. 286, a pale yellow variety of *Agaricus muscarius*, see n. 13, for Schæffer's *citrinus*; but this is not quite conclusive to us. Persoon cites *Agaricus Mappa*, Willd. Berol. 381. Batsch. Elench. 57, as a variety of the present *Amanita*, distinguished by a darker colour of the *head*, and yellow *gills*: he speaks also of brownish warts on the head. Willdenow says the *gills* of his plant are whitish. Albertini and Schweiniz, accurate practical observers, say, " we find the warts upon the *head* not very rare. The *ring*, and frequently the *stalk*, is distinguished by a palish lemon-colour. The whole *fungus* is sometimes half a foot high, in which case the *head* is four inches broad, or more." Persoon notices apparently a still different variety, on rotten trunks of trees, distinguished by its elegant sulphur-colour, flattish head, and acrid flavour.

10. A. *viridis*. Green Egg-Agaric. Perf. n. 9, not 8. Disp. Meth. 67. Albert. and Schwein. Consp. 143. (Agaricus bulbosus; Bulliard t. 2, and t. 577. Fungus phalloides annulatus, fordidè virescens et patulus; Vaill. Parif. 74. t. 15. f. 5.)—Head convex, dull green, mostly naked. Stalk and gills white.—Found in sandy moist shady woods, from August to October, in France and Germany. The *wrapper* is inflated, whitish. *Head* four or five inches broad, convex, not bossed, of a more or less bright green, variegated occasionally with brown, and turning olive-brown in decay, when, according to Bulliard, it exhales an intolerable cadaverous smell, being a very dangerous species, though when young destitute of any bad scent or flavour. The *head* sometimes retains fragments of the *wrapper*, in the form of warts or broad patches, but this seems far from being universal or frequent.

11. A. *cæsarea*. Imperial Egg-Agaric. Perf. n. 10, not 9. (A. aurantiaca; Perf. n. 11, not 10. Agaricus cæsarius; Scop. Carn. v. 2. 419. Schæff. Fung. v. 4. 64. t. 247. A. aurantiacus; Bulliard t. 120. Fungus planus orbicularis aureus; Bauh. Pin. 371. Mich. Gen. 186. t. 77. f. 1. F. ovinus; Sterbeeck Fung. 64. t. 4. f. D, E, F. Fungorum esculentorum genus 17; Cluf. Hist. v. 2. 272.) —Head convex, naked, deep orange-coloured; striated at the margin. Gills yellow, convex. Wrapper dilated upwards. —Native of Italy, France, Carniola, Bohemia, &c., but never observed in England. The *wrapper* is white, with a dilated entire border. *Stalk* hollow, nearly cylindrical, yellowish-white, or pale yellow, from four to six inches high. *Head* from four to six inches wide, almost hemispherical when young, of a rich deep orange, smooth and naked, scarcely ever warty, striated near the edge, turning brownish or purplish in fading, as in Schæffer's figure, where it is drawn somewhat bossed, which we have never seen. The *gills* are usually of a delicate lemon-colour, as well as the ring. Persoon rightly suspected his *A. cæsarea* and *aurantiaca* not to be distinct species; they do not appear to us to be even varieties, Schæffer's plant being only in a more forward state than Bulliard's. We retain the oldest specific name, which is that of Scopoli. It serves to commemorate an historical fact, that the emperor Claudius was murdered by poison given with this fungus, to which the Romans applied the name of *Boletus*, and which Nero called "the food of the gods," because Claudius had eaten it, who was subsequently, like his sacred compeers, become a god! The Agaric before us is esteemed the most delicious and delicate of all *fungi*. The writer of this has examined and eaten it in Italy, where it is far from rare in summer, though so much in request, as to find a place chiefly at the tables of the great. Clusius tells of his supposing some soup, at a distinguished man's table in Hungary, made of this fungus, to have been coloured with saffron. Dr. Withering has confounded Schæffer's plate with *Agaricus xerampelinus* of the same author, v. 4. 49. t. 214. Sowerb. Fung. t. 31. With. v. 4. 214. Hence he was led into the further mistake of supposing, as his *A. xerampelinus*, though eatable, is strong and disagreeable, that *Agaricus deliciosus* was what Claudius feasted upon. The latter is indeed a very savoury food, but destined to the vulgar in France and Italy, being by far more abundant than our *Amanita cæsarea*. The oversight committed by Dr. Withering, respecting this famous fungus, and his own, as well as Schæffer's, *Agaricus xerampelinus*, is the more remarkable, as the latter has neither a *wrapper* nor a *ring*. Such errors are rare in this excellent writer. Mr. Sowerby has avoided the same mistake, though he has not explained it. We decline citing *Elvela Ciceronis*, Battar. Fung. Arimin. 27. t. 4, C, because no *ring* is there expressed; but we do not doubt the identity of the plant.

Sect. 3. *Stalk with an obliterated wrapper at the base, and a ring at the upper part. Warts on the head small, and generally equal.* To this section Persoon gives the name of *Myoperda*, because some of the species are used for killing flies. All of them perhaps are dangerous.

12. A. *muscaria*. Fly Egg-Agaric. Perf. n. 12, not 11. Albert. and Schwein. Consp. 143. (Agaricus muscarius; Linn. Sp. Pl. 1640. Hudf. 612. With. v. 4. 184. Schæff. Fung. v. 4. 13. t. 27, 28. Sowerb. Fung. t. 286. A. pseudo-aurantiacus; Bulliard t. 122. Fungus bulbosus, e volvâ erumpens, pileolo supernâ parte aureo, ad oras striato, infernâ, et annulato pediculo, albis, radice bulbosâ; Mich. Gen. 188. t. 78. f. 2. Fungi lethales; Ger. Em. 1581, fig. on the left, at the bottom.)—Head scarlet, shining, convex, at length flattish, variously studded with white warts. Gills, ring, and stalk pure white. Wrapper with scarcely any remaining border.—Common in woods in autumn, especially under fir-trees. A large species, conspicuous for the splendid orange-red hue of its sattin-like head, contrasted with the *stalk* and *gills*, and with the prominent angular white or cream-coloured warts, scattered, more or less abundantly, over its surface. These warts are formed from the *wrapper*, torn off close to the base of the *stalk*, which Bulliard well observed, as a specific mark between this and our last. It is highly important to discriminate them, *A. muscaria* being venomous in a great degree. When dried, it renders milk poisonous to flies and bugs, killing them very expeditiously;

for

for which purpose it is preserved in some countries all the year round. Bulliard records, that he ate two ounces of this fungus raw, without any harm whatever, though he found it fatal when given to cats or dogs. Persoon mentions a variety by the name of *A. formosa*, whose warts were loose and yellowish, the *stalk* likewise being yellowish, very long, and loosely scaly. Also another, called *A. puella*, which is smaller, mostly naked, or only bordered with the warty substance; this is Schæffer's t. 28. Dr. Withering reduces the two following, perhaps, to the same species; but so many authors have kept them separate, especially Albertini and Schweiniz, that we shall follow Persoon in the same measure.

13. A. *umbrina*. Brown Warty Egg-Agaric. Pers. n. 13, not 12. Albert. and Schw. Consp. 143. (Agaricus verrucosus; Huds. 613. Curt. Lond. fasc. 5. t. 72. A. maculatus; Schæff. Fung. v. 4. 39. t. 90. Fungus muscas interficiens fuscus, maculis albis; Buxb. Hallens. 121.)—Head of a sooty or tawny brown, flattish, variously studded with white warts. Gills, ring, and stalk white.—More common than the preceding, but often accompanying it, in dry sandy woods, fields and pastures, especially under beech-trees, through the autumn. Withering, Curtis, and Lightfoot consider this as a mere variety of *A. muscaria*, differing in the brown colour of its *head*, often tinged with yellow, or faintly with red. The size of the whole plant is usually somewhat smaller. We have made no particular observations on this subject. Colour in this tribe often affords good specific characters, and we should, moreover, be careful, in all the departments of natural history, not to be led away by any one very peculiar mark, like the warts in the present instance, to consider every thing, that has such a mark, as one species. Even Linnæus often fell into this error. We know not how the question is to be decided respecting these *fungi*, their artificial propagation by seed being attended with so much difficulty. It is sufficient that we here register their names and distinctions, under the correction of any person who may find good reasons for uniting them. The poisonous quality of *A. umbrina*, with respect to flies, is acknowledged in the above synonym of Buxbaum. Curtis however found the base of the stalk to be the favourite food of a nondescript species of *Tipula*, smaller than the *plumosa*, whose *larvæ* soon devour that and every other part of the plant.

14. A. *rubescens*. Blush-coloured Egg-Agaric. Pers. n. 14, not 13. Albert. and Schwein. Consp. 144. (Agaricus pustulatus; Schæff. Fung. v. 4. 39. t. 91.)—Head convex, opaque, reddish. Warts crowded, white like the gills. Flesh turning red when broken.—Native of beech woods in Germany, in autumn. We know nothing of its occurrence in Britain, for Dr. Withering's fifth variety of the *muscaria* may probably be different from what is before us. Albertini and Schweiniz assert that the *head* and *stalk* invariably turn red, sooner or later, after being broken, and that this is a sure specific test. The *head* seems more convex than that of *A. umbrina*. Its hue, according to the authors just quoted, is occasionally reddish, livid, smoky, or inclining to a liver-colour. *Stalk* two inches high. *Taste* scarcely any. We conceive this to be distinct from both the foregoing, whatever may be the case between them with regard to each other; and its usual appearance is very elegant, owing to the delicate tawny flesh-colour of the *head*, studded with copious white, or pale flesh-coloured, *warts*. Persoon has a variety under the name of *circinnata*, for which he cites with doubt *Agaricus myodes*, Schæff. Fung. v. 4. 69. t. 261. The character given by Persoon is, "Head hemispherical, somewhat umbilicated, reddish. Warts oblong, whitish, circularly disposed. Gills flattish, whitish. Stalk bulbous, scaly, the colour of the head." He adds that the *stalk* is two inches long, solid, always perforated by worms (or insects) at the base. *Gills* obovate, sometimes decurrent in a tooth-like form. Substance reddish under the cuticle. Taste not unpleasant. It occurs, but rarely, in woods during autumn. Schæffer's figure exhibits a most elegant blush-coloured *fungus*, internally red, when cut, which we can have no hesitation in considering one species with Persoon's *circinnata* and *rubescens*.

15. A. *virescens*. Greenish Egg-Agaric. Pers. n. 15, not 14.—"Head fleshy, flat, palish-green. Warts thick, whitish, with many angles. Stalk stoutish, white, with shaggy scales."—In woods, but extremely rare. *Stalk* three or four inches long, clothed with soft shaggy scales. *Wrapper* nearly obliterated. Substance of the *head* spongy, from four to six lines in thickness, not unpleasant to the taste.

16. A. *ampla*. Broad Egg-Agaric. Pers. n. 16, not 15. —"Head fleshy, very broad, mouse-coloured; smooth at the margin. Warts thickish, paler. Stalk white, solid, very stout. Gills narrow, rather thick."—Found in fir woods in Germany, but rarely. Perhaps the largest of its genus. *Stalk* four or five inches long, transversely scaly at the summit. *Gills* thick, about three lines only in breadth. *Head* minutely, in some degree, fibrous, and after the *warts* fall off, cellular. Taste like the Common Mushroom, *Agaricus campestris*. *Persoon*.

17. *A. aspera*. Rough-headed Egg-Agaric. Pers. n. 17, not 16. Obs. Mycol. v. 2. 38. ("Agaricus asper; Abbild. der Schwämme, fasc. 3, with a plate." A. verrucosus; Bulliard t. 316. A. myodes; Bolt. Fung. v. 4. t. 139, excluding both synonyms.)—Head hemispherical, fleshy, compact, dusky red, rough with crowded pointed warts. Gills white, crowded. Stalk rather bulbous.—Not rare in woods, about July, August, or September, growing dispersed. It has been observed in Germany, France, and England. Persoon says the scent is powerful; Bulliard, on the contrary, describes this species as inodorous, with a salt taste, partaking but little of a mushroom flavour, and he presumes it to be poisonous. This author justly adverts to the affinity of his plant to our *Amanita muscaria*, observing that it is white or reddish under the skin, never, like the *muscaria*, yellow. Persoon in his excellent *Obs. Mycol.* gives the following account. "*Head* at first ovate, inclining to cylindrical; when expanded six inches broad, half an inch thick, compact in substance, strong in scent, often streaked with white at the margin, from cracks in the cuticle. *Warts* small, erect, pointed. *Gills*, as usual with this genus, thin, unconnected. *Stalk* from four to six inches high, solid, marked towards the base, with little scaly warts, like rudiments of the *wrapper*. *Ring* sometimes almost obliterated, and hanging in fragments to the edge of the head."

The *wrapper* in all the species of this third section is, indeed, so closely united to the base of the *stalk*, as to constitute a kind of bulb, but there is a marginal dilatation, less visible in *A. aspera* than any other, which evinces the true nature of the part in question. This species, though generally so very convex, even hemispherical, appears by Bulliard's plate, to assume a concave cup-shaped form in advancing towards decay.

AMARANTHI, the 30th natural order in Jussieu's system, being the first of his seventh class. See NYCTAGINES for the characters of this class. The following are the characters of the *Amaranthi*.

Calyx divided, more or less deeply, often surrounded by scales at the base. *Stamens* definite, sometimes distinct, sometimes monadelphous; in some genera there are scales alternate with the filaments; in others the combined filaments

ments form a tube or sheath. *Germen* simple; style or stigma simple, or double, or triple. *Capsule* of one cell, with an unconnected receptacle, and either bursting at the summit, or splitting all round, containing one or many *seeds*. The *corculum* is curved round a farinaceous mass. *Flowers* capitate or spiked. *Leaves* generally undivided and pointed; in some alternate; in others opposite; in a few instances accompanied by *stipulas*. *Stem* for the most part herbaceous. *Stamens* and *pistils* sometimes in separate flowers.

Sect. 1. *Leaves alternate, without stipulas.*

Under this section Jussieu enumerates *Amaranthus* and *Celosia* of Linnæus; with *Aerua* of Forskall, a genus formed of alternate-leaved species of *Illecebrum;* and *Digera* of the same author, to which *Achyranthes muricata* of Linnæus is supposed to belong.

Sect. 2. *Leaves opposite, without stipulas.*

Consists of *Iresine*, *Achyranthes*, *Gomphrena*, and *Illecebrum*.

Sect. 3. *Leaves opposite, with stipulas.*

Under this section are ranged *Paronychia* of Tournefort, separated from the Linnæan *Illecebrum;* and *Herniaria* of all authors.

This order, as Jussieu candidly observes, is very nearly related to that of the *Caryophylleæ*, which, on account of its having petals, he is obliged to place in a far distant part of his system. He remarks, on this subject, that the absence or presence of a *corolla* does not always afford an essential, or eminently natural, distinction; which is very true, but there is no character of natural orders without some exception, and hence Linnæus was led to deny the possibility of defining really natural orders by words, or any essential characters.

Jussieu, in the Annales du Museum, v. 2. 131, has published some additions to the present order, which, according to a recent alteration, and perhaps an improvement, in the nomenclature of natural orders, he there terms *Amaranthaceæ*. A translation of his paper may be seen in Sims and Konig's Ann. of Bot. v. 2. 274. The author here makes but two sections of the order in question, one having naked, the other stipulated, leaves. To the first he adds a new genus by the barbarous name of *Pupalia*, founded on the Linnæan *Achyranthes lappacea*, called in Rheede's Hortus Malabaricus, v. 7. t. 43, *Pupal-Valli*. Of this we are surprised to find Jussieu had never seen the fruit, and we cannot but observe that its generic characters are rather weak, being chiefly taken from the inflorescence and bracteas.

To the section with stipulated leaves, this eminent botanist adds three new genera. 1. *Anychia* of Michaux, to which belongs *Queria canadensis* of Linnæus. 2. LITHOPHILA of Swartz. 3. POLYCHROA of Loureiro. The two last are already described in their proper places. See also QUERIA.

Jussieu proceeds to remark, that *Cyathula* of Loureiro, a plant of this order, is really an *Achyranthes* with a many-cleft stigma; but that POLIA of the same author, (see that article and HAGÆA,) supposed to belong to the *Amaranthi*, is really one of the *Caryophylleæ*.

VOL. II.

AMBOISE, AMBASIA, or *Ambacia*, in *Geography*, a town of France, in the department of the Indre and Loire, and chief place of a canton in the district of Tours, situate at the conflux of the Loire and Amasse. The place contains 5100, and the canton 14,415 inhabitants; the territory comprehends 322½ kiliometres, and 16 communes.

AMDOA, in *Geography*. See THIBET.

AMEDNAGUR, l. 1, Soubah, now called Dowlatabad. Add—This city has generally been placed 50 miles to the S.E. of its true position.

AMELIA, l. 5, for including *r.* exclusive of; l. 6, *r.* 10,594 and 7186. Add—Nottaway contains 9278 inhabitants, of whom 6368 are slaves.

AMENTACEÆ, in *Botany*, of which term mention has already been made in its place, as designating a Linnæan natural order, is also the appellation of the 99th order in Jussieu's system, the fourth of his fifteenth class; corresponding for the most part, though not entirely, with that of Linnæus, and so called from *Amentum*, a Catkin, in allusion to the nature of its fructification. See EUPHORBIÆ for the characters of this fifteenth class of Jussieu, and remarks thereon. He thus defines his *Amentaceæ*.

Flowers monoecious or dioecious, (rarely with stamens and pistils in the same,) all destitute of petals. The male, or barren, flowers disposed in a catkin, consisting either of scales, into which the stamens are inserted, or each of those scales has a *calyx* attached to it, which bears the *stamens*. The latter are either definite, or indefinite, with distinct filaments. (We would here observe that two or three species of *Salix* are remarkable for their combined, or monadelphous, filaments.)—The female, or fertile, flowers are either amentaceous, or fasciculated, or solitary; sometimes furnished with a single-leaved *calyx*, sometimes with only a scale. The *germen* is superior, either simple, or in some rare instances more than one, of a certain determinate number. *Style* one or more. *Stigmas* generally several. *Seeds* either naked, or enclosed in superior *capsules*, which are either of a coriaceous or bony texture, as many in number as the germens, and for the most part of a single cell. *Corculum* destitute of *albumen*, with a straight radicle. *Stem* arboreous, or shrubby, rarely of humble growth. *Leaves* alternate, accompanied by *stipulas*, mostly simple.

Sect. 1. *Flowers with stamens and pistils.*

Here Jussieu ranges *Fothergilla*, *Ulmus*, and *Celtis;* of which the two latter are placed by Linnæus among his *Scabridæ*. *Hamamelis*, which the last-named author has, in manuscript, referred to his *Amentaceæ*, and which is surely next akin to *Fothergilla*, is reckoned by Jussieu among his *Berberides*, or at least among several genera supposed related to that rather miscellaneous order.

Sect. 2. *Flowers dioecious.*

This contains *Salix*, *Populus*, and *Myrica*.

Sect. 3. *Flowers monoecious.*

A larger assemblage of genera, if not of species, consisting of *Betula*, *Carpinus*, *Fagus*, *Quercus*, *Corylus*, *Liquidambar*, (under which last the genus now called COMPTONIA, see that article, is hinted at,) and *Platanus*. There is no appendix of doubtful genera, as in most other orders of Jussieu, but a suspicion is expressed respecting *Liquidambar* and *Platanus*.

The *Amentaceæ* of Linnæus are, *Salix*, *Populus*, *Platanus*, *Sloanea*, with a just indication of doubt, *Fagus*, *Juglans*, *Quercus*, *Corylus*, *Carpinus*, *Betula*, *Myrica*, *Pistacia*, and *Cynomorium*. *Brabejum* is, in the Linnæan manuscript, inserted immediately before *Fagus;* *Hamamelis* before *Betula*, after which *Brabejum* is again written; an evident indication of great uncertainty in the mind of the writer, who knew this genus but imperfectly, and who had conceived no idea at all of the order *Proteaceæ*, to which it clearly belongs, and which makes so striking a figure in the works of Jussieu; and especially of our countryman Mr. Brown. See Prodr. Nov. Holl. v. 1. 363, and Tr. of Linn. Soc. v. 10.

AMERCOTE, in *Geography*, a fortified place, which formerly belonged to the country of Scind, but is now in the possession of the rajah of Joudpore. Situated S.E. of Hydrabad, and about 25 miles from the eastern branch of the Indus.

AMERICA,

AMERICA, North. See United States.

AMES, a townſhip of Ohio, in the county of Athens, having 608 inhabitants.

AMESBURY, a town of the Maſſachuſetts, in Eſſex county, having 1890 inhabitants.

AMHERST, l. 3, *r.* 10,548; l. 4, *r.* 5207.

Amherst, l. 6 from the bottom, *r.* 1554. Add—Alſo, a town of Maſſachuſetts, in the county of Hampſhire, having 1469 inhabitants.

AMIA, in *Ichthyology*, a genus of the abdominal fiſhes, the characters of which are, that the head is bony, naked, rough, with conſpicuous futures; teeth, both in the jaws and palate, cloſe-ſet and ſharp; the two cirri near the noſtrils; the gill-membrane twelve-rayed; and body ſcaly. There is one ſpecies, *viz.*

Calva; the Carolinian Amia, with a black ſpot at the baſe of the tail. This is a ſmall freſh-water fiſh, inhabiting ſome parts of Carolina. Deſcribed by Linnæus, from a ſpecimen ſent from Carolina by Dr. Garden.

AMITY, in *Geography*, a townſhip of Pennſylvania, in the county of Berks, containing 1090 inhabitants.

AMMODYTES, in *Ichthyology*. Add—The ammodytes tobianus is the launce with the lower jaw longer than the upper. It conceals itſelf about a foot in the ſand, with its body rolled into a ſpiral form; it is dug or drawn up, and uſed by the fiſhermen as a bait; it is alſo conſidered as a delicate article of food. The general length is from eight to ten inches. The launce lives on worms, water-inſects, and ſmall fiſhes, and even occaſionally on thoſe of its own ſpecies. It is itſelf preyed upon by the larger fiſhes, and particularly by the mackarel. It ſpawns in the month of May, depoſiting its eggs in the mud near the edges of the coaſt. The ſwimming bladder is wanting, ſo that the animal is fitted only for a littoral reſidence; and its ſcales are ſo ſmall that they have been wholly overlooked, and their exiſtence diſputed by ſome ichthyologiſts. Shaw.

AMMONIA, in *Chemiſtry*. The following additions to our knowledge, reſpecting the volatile alkali, have been made ſince that ſubject was treated in the Cyclopædia. Water, as has been already ſtated, by abſorbing ammoniacal gas increaſes in bulk, and becomes ſpecifically lighter. The following table by Mr. Dalton exhibits the quantity of ammonia contained in ammoniacal ſolutions of different ſpecific gravities.

Specific Gravity of Liquid.	Grs. of Ammonia in 100 Water-grain Meaſures of Liquid.	Grs. of Ammonia in 100 grs. of Liquid.	Boiling Point of the Liquid.	Volumes of Gas condenſed in a given Volume of Liquid.
.85	30	35.3	26°	494
.86	28	32.6	38	450
.87	26	29.9	50	419
.88	24	27.3	62	382
.89	22	24.7	74	346
.90	20	22.2	86	311
.91	18	19.8	98	277
.92	16	17.4	110	244
.93	14	15.1	122	211
.94	12	12.8	134	180
.95	10	10.5	146	147
.96	8	8.3	158	116
.97	6	6.2	173	87
.98	4	4.1	187	57
.99	2	2.0	196	28

When potaſſium or ſodium is heated in ammoniacal gas, the metal becomes changed to an olive-green colour, and loſes its metallic luſtre; at the ſame time a portion of the gas is abſorbed, and a quantity of hydrogen emitted, exactly equal to the quantity that would be evolved if the potaſſium or ſodium were put into water. If the olive-green matter be heated, it gives out three-fifths of the ammonia abſorbed, two-fifths in the ſtate of ammoniacal gas, and one-fifth in the ſtate of hydrogen gas and azote. Sir Humphrey Davy, having heated the olive-coloured matter ſtrongly in a platinium tube, obtained nearly the whole of the ammonia abſorbed, though about three-fifths of it were in the ſtate of azotic and hydrogen gas. If the olive-coloured matter be placed in contact with a very little water, it is converted into potaſh, or ſoda and ammoniacal gas, and the gas is juſt equal to what the metal had abſorbed. If it be placed in contact with a metal and heated, an alloy of the metal with potaſſium or ſodium is obtained.

For theſe curious facts we are indebted to Gay Luſſac and Thenard, and Davy. Dr. Thomſon thinks they ſhew that potaſſium and ſodium have the property of decompoſing ammonia, and combining with its azote, while the hydrogen of the ammonia is ſet at liberty; and the *azoturet* formed, he thinks, combines with a portion of the remaining undecompoſed ammonia. He acknowledges, however, that there are ſome objections to this opinion; and the facts accord better with the opinion, that an unknown compound of azote and hydrogen unite with the alkaline metal, while the compound thus formed combines with a portion of undecompoſed ammonia.

A curious experiment made by Berzelius and Pontin induced Berzelius to draw the concluſion that ammonia is compoſed of an unknown metallic baſis, which he has called *ammonium*, united to oxygen. This experiment has been ſince confirmed by ſir H. Davy, Gay Luſſac, and others, and is as follows:

When mercury is brought in contact with ammonia at the negative end of a galvanic battery, it gradually increaſes in volume, and is converted into a ſoft ſolid, having all the appearances of an amalgam. The experiment ſucceeds better if ſal ammoniac ſlightly moiſtened be ſubſtituted for liquid ammonia. This amalgam, at the temperature of 70° or 80°, is a ſoft ſolid, of the conſiſtence of butter; at 32° it is a firm cryſtallized maſs, having a ſpecific gravity below 3. When expoſed to the air, it ſoon becomes covered with a cruſt of carbonate of ammonia. When thrown into water, hydrogen is evolved equal to half its bulk, the mercury is revived, and the water becomes a weak ſolution of ammonia. When confined in a given portion of air, the air increaſes in bulk, and pure mercury appears. Ammoniacal gas, amounting to $1\frac{1}{2}$ or $1\frac{2}{7}$ the volume of the amalgam, is evolved; and a quantity of oxygen equal to $\frac{1}{7}$th or $\frac{1}{8}$th of the ammonia diſappears. When thrown into muriatic acid gas, it becomes coated with muriate of ammonia, and a little hydrogen is diſengaged. In ſulphuric acid it becomes coated with ſulphate of ammonia and ſulphur. All attempts to preſerve this amalgam failed, from the impoſſibility of obtaining it free from water. When put into a glaſs tube, or when confined under naphtha or oils, the mercury ſeparated, ammonia was formed, and a quantity of hydrogen evolved.

Gay Luſſac and Thenard conſidered this amalgam as a ſimple compound of mercury and ammonia; but no analogous compound is known to chemiſts, as mercury, when it unites to other ſubſtances, except metals, always loſes its metallic luſtre. Theſe reaſons induced Berzelius to form the above opinion. Moſt chemiſts at preſent agree with Gay Luſſac and Thenard; but if their opinion be well founded, we muſt alter the notions entertained reſpecting amalgams.

The

The opinion at prefent entertained refpecting the compofition of ammonia is, that it is compofed of three volumes of hydrogen and one volume of azote condenfed into two volumes. Hence its fpecific gravity compared with that of common air is .590; 100 cubic inches at a mean temperature and preffure weigh 18 grains, and the weight of its atom is 21.25; that of oxygen being confidered as 10.

Ammonia, *Salts of.* Thefe have been omitted in the ufual place, namely, under Ammonia; but moft of them will be found in a fubfequent part of the work, under Salts. Thofe defcribed elfewhere will be referred to here, and thofe remaining to be defcribed will be now noticed.

Sulphite of Ammonia. See Sulphite *of Ammonia.*

Chromate of Ammonia. This falt may be formed by faturating chromic acid by ammonia. It ufually exifts in the form of dendritical cryftals of a fine yellow colour. When flightly heated, it is decompofed, even when in folution, brown flocks of chromic oxyd precipitating.

Arfeniate of Ammonia. See Arseniate *of Ammonia.*

Molybdate of Ammonia. This falt diffolves readily in water. The folution does not cryftallize. When heated, the ammonia is partly driven off, partly decompofed, and the acid is reduced to the ftate of an oxyd.

Tungftate of Ammonia. This falt may be formed by diffolving tungftic acid in carbonate of ammonia. It is foluble in water, and cryftallizes. Its tafte is metallic, and it is entirely decompofed by heat.

Benzoate of Ammonia. This falt cryftallizes with difficulty. It deliquefces, and is very foluble in water. It has been recommended by Berzelius as an excellent re-agent for precipitating iron from its folution. It throws down this metal of an orange colour, and occafions no infoluble precipitates with any of the other bafes, except tellurium and mercury, and perhaps copper, all of which are thrown down white.

Succinate of Ammonia. See Succinic *Acid.* This falt has alfo been much recommended for precipitating iron when in the ftate of peroxyd.

Camphorate of Ammonia. This falt may be prepared by diffolving carbonate of ammonia in hot water, and adding camphoric acid flowly till the alkali is faturated. It cryftallizes with difficulty; is fparingly foluble in cold water, but much more foluble in hot. It is completely foluble in alcohol. Moft of the calcareous falts form triple compounds with this falt.

Citrate of Ammonia. See Citrate *of Ammonia.* The remaining falts of ammonia are fo totally devoid of intereft, or fo little known, that we do not think it neceffary to enumerate them.

AMMYRSINE, in *Botany*, a new genus of Mr. Purfh's, more happily circumftanced in its characters, perhaps, than in its name. The latter is formed from αμμος, *fand*, and μυρσινη, *a dwarf myrtle*; but *Myrfine*, being an eftablifhed generic name, cannot, with propriety, make a part of another. Linnæan law, (fee *Phil. Bot. fect.* 225,) and good fenfe, are both againft it; and if fome fimilar innovations have, from peculiar caufes, crept in, they are not to be imitated, though for the prefent they may be tolerated. The genus in queftion is founded on *Ledum buxifolium*, (fee Ledum, n. 3,) and ftands in the Clafs and Order *Pentandria Monogynia*, in Mr. Purfh's *Flora* 280 and 301, agreeing, of courfe, in Natural Order with *Ledum*. The following are its characters.

Calyx in five deep fegments. Petals five. Stamens prominent. Capfule of five cells, burfting at the fummit. *Ledum* is characterized.

Calyx minute, five-toothed. Corolla flat, in five deep fegments. Capfule of five cells, burfting at the bafe.

AMNIOS, *Liquor of the, Chemical Properties of.* The peculiar acid principle termed by Vauquelin and Buniva *amniotic acid*, does not appear to exift during all the periods of geftation in the liquor amnii of the cow. Dr. Prout examined this fluid taken from an animal which had been flaughtered in an early period of her geftation, but was not able to detect any of the acid in queftion. See Annals of Philofophy, vol. v. p. 416.

AMOMUM, in *Botany*, αμωμον of the Greeks, moft probably derived from its Arabic denomination *hhamâmâ*, as De Theis writes it, is the ancient name of a fort of aromatic grain, or fruit, included, according to all appearance, among the fpecies of the prefent Amomum of botanifts. (See our former article, where this genus comprehends a much more extenfive range of fpecies than are now underftood to belong to it.) Linnæus, and his immediate followers, included under *Amomum* almoft every plant of the *Scitamineæ* that they knew not how otherwife to difpofe of; and Gærtner, though he altered the name for the worfe, to Zingiber, (fee that article,) threw no new light upon the characters or hiftory of the genus, but rather, like every body elfe, added to their confufion. Mr. Rofcoe firft defined this genus, like the reft of the Scitamineæ, as the reader will find under that head, by a clear diftinctive character; and while he greatly reduced the number of fpecies, rendered the whole perfectly clear and intelligible. We fhall, as we have done with Alpinia, give a full view of this genus, as at prefent underftood, and while we make confiderable retrenchments, fhall have fomething new to add in their place.—Rofcoe Tr. of Linn. Soc. v. 8. 351. t. 20. f. 11. Dryandr. in Ait. Hort. Kew. v. 1. 8. Linn. Gen. 2. Schreb. 3. Willd. Sp. Pl. v. 1. 6. Mart. Mill. Dict. v. 1. Carey Hort. Bengal. 1. Roxb. Monandr. 23. Juff. 63. Lamarck Illuftr. t. 2. f. 1. (Zingiber; Gærtn. t. 12. f. 1, 2, 3. 6.)—Clafs and order, *Monandria Monogynia.* Nat. Ord. *Scitamineæ*, Linn. *Cannæ*, Juff.

Gen. Ch. *Cal.* Perianth fuperior, of one leaf, tubular, fheathing, membranous, coloured, fplitting at one fide about half way down. *Cor.* of one petal; tube fhorter than the calyx, cylindrical, erect; outer limb in three nearly equal, oblong-lanceolate, concave, erect fegments much longer than the calyx; inner of one large, undulated lip, with a fhort concave claw. *Stam.* Filament one, rather longer than the claw, ftout, oblong, depreffed, fomewhat incurved, with a lanceolate, acute, afcending lobe, about half its own length on each fide, at the bafe, and a pair of fimilar, erect or tranfverfe, lobes, forming a creft at the fummit, with either an intermediate prominence, or a notch; anther of two diftinct, elliptic-oblong, lobes, attached by the back, below the fummit. *Pift.* Germen inferior, fmall, roundifh, fomewhat furrowed; ftyle thread-fhaped, lying clofe to the filament, between the lobes of the anther; ftigma funnel-fhaped, fringed, erect, projecting a little beyond the filament. *Peric.* Capfule either ovate-oblong, or nearly globular, of three cells, and three coriaceous, fomewhat ftriated, valves; the partitions membranous. *Seeds* numerous, oblong, roundifh, or flightly angular, each enveloped in a foft pulpy tunic, which becomes membranous, or evanefcent, when dry.

Eff. Ch. Anther of two diftinct lobes. Filament with a lobed creft, above the anther. Outer limb of the corolla in three oblong lobes; inner a fingle lip. Capfule of three cells and three valves. *Seeds* tunicated.

One of the moft natural genera that can exift, in any natural order, and the beft defined in habit, as well as character.

character. The *root* is perennial, tuberous, jointed, and fomewhat creeping, with ftrong and deep fibres. *Stems* at leaft biennial, erect, fimple, invefted with the fheaths of the two-ranked, fimple, elliptic-oblong, ftriated, vertical *leaves*. *Spikes* invariably radical, fimple, rather lax, ftalked, their ftalks fcaly. *Bracteas* large, concave, coriaceous, more or lefs clofely imbricated, fingle-flowered. *Flowers* large and handfome, white or reddifh, remarkable for the broad, rounded, undulated, generally crenate *lip*, often yellowifh at the bafe. *Capfules* large, with very numerous, in general powerfully aromatic, or very pungent, *feeds*. Every part of the plant is commonly aromatic. We have improved our knowledge of the *fruit*, and the nature of the *tunic* of the *feeds*, from Dr. Roxburgh's obfervations in India. Gærtner fpeaks of the *capfule* as not burfting, becaufe he had chiefly examined fpecimens gathered before they were ripe, like all the Cardamoms of the druggifts' fhops, fome of which belong to the genus before us. The fame able author has alfo miftaken the top for the bottom, in his figure called *A. fylveftre*.

We know not how it has happened that only one fpecies of *Amomum* appears in *Hort. Kew. A. Afzelii;* with another, *A. grandiflorum*, (publifhed long before) in the *Addenda* to that work. *A. Granum-Paradifi*, raifed from feeds brought from Sierra Leone by Dr. Afzelius, has long been cultivated in England, though we have never heard of its flowering; and there are feveral more in the fame predicament. They are ftove plants, requiring a confiderable degree of heat. No collection perhaps is fo rich in this genus, or in the whole natural order, as that of the Botanic Garden at Liverpool, where the plants have every advantage of fkill of cultivation, and where nothing that may occur, relative to their growth or hiftory, can efcape the eye of that illuftrious writer and botanift, who firft reduced them to order.

All the known fpecies appear to be natives either of equinoctial Africa, Madagafcar, or the Eaft Indies; nor have we any from America, or the Weft Indies.

1. A. *Cardamomum*. Clufter Cardamom, or True Amomum. Linn. Sp. Pl. 2. Willd. n. 7. Loureir. Cochinch. 3. Retz. Obf. fafc. 3. 59. Rofc. n. 1. Roxb. n. 1. (A. n. 2; Linn. Mat. Med. 1. A. verum; Ger. Em. 1548. f. 6. Amomum; Dale Pharmac. 277. Barrel. Ic. t. 571. f. 1. Amomo legitimo degli antichi; Pona Baldo, 50. Cardamomum minus; Rumph. Amboin. v. 5. 152. t. 65. f. 1. Bont. Hift. Nat. 126, with a figure (the oblong capfule excepted, which belongs to Cardamomum medium of the fhops). Zingiber minus; Gærtn. t. 12. f. 6.)— Leaves lanceolate. Spikes lax, many-flowered. Bracteas lanceolate, acute. Lip three-lobed. Creft of three, nearly equal, erect lobes. Capfule globular.—Native of the Malay iflands, where the inhabitants ufe the feeds as a fubftitute for the Malabar, or Leffer, Cardamom. Dr. Charles Campbell fent plants from Sumatra to the Calcutta garden, where they bloffom in May, juft before the rains begin. *Roxburgh*. Rumphius fpeaks of this fpecies as cultivated plentifully, but not wild, in Amboyna and the neighbouring iflands. It is certainly the true original *Amomum* of the fhops, ftill to be met with at Venice and in other parts of the fouth of Europe, though generally fupplanted by the more valuable Leffer Cardamom, *Amomum repens* of Sonnerat, which Linnæus confounded herewith, and of which we propofe to treat by the name of ELETTARIA hereafter. Nothing is more rare, with collectors of the Materia Medica, than the capfules of this *A. verum* in their native clufters or fpikes. We were fortunate enough, after ranfacking the druggifts' fhops at Marfeilles and Venice, to meet with two or three fuch fpecimens, accompanied by *bracteas*, very important as determining the identity of this plant with the Linnæan fpecimens of *A. Cardamomum*. By macerating the *flowers* of thefe laft, we have alfo afcertained their ftructure, which agrees with Dr. Roxburgh's account, the fummit, or creft, of the *filament* being three-lobed. The lateral lobes are fhort and erect, not much elevated above the central one; neither are they tranfverfe, awl-fhaped, and elongated, as in *A. Afzelii, grandiflorum*, and fome others. The two lobes of the *anther* ftand near the edges of the *filament*, remote from each other, but meet round the *ftyle*. Dr. Roxburgh fpeaks of the *flower-fpikes* as even with the earth. But however this may be, they are elevated above the *root*, each on a fimple wavy *ftalk*, two inches long, clothed with fheathing, elliptical, ribbed, abrupt, barren fcales. The *fpike* is an inch or an inch and a half long, fometimes two inches when in feed, with many pale, fmooth, imbricated, elliptic-lanceolate *bracteas*, near an inch in length, one to each *flower*. The *germen, calyx*, and *common receptacle*, are hairy, or rather briftly. *Capfules* feffile, the fize of a black currant, globular, fomewhat depreffed, obfcurely three-lobed, ftriated, crowned with a blunt protuberant fcar. *Seeds* roundifh, angular, dotted, brown, aromatic and pungent, refembling in flavour the *Elettaria*, but lefs powerful, and rather lefs agreeable. The *leaves* of this fpecies are rather narrower than in others of the genus, except perhaps the following; but our leading diftinctions throughout muft be taken from the *bracteas, flowers*, and *fruit*.

2. A. *anguftifolium*. Greateft Cardamom, or Madagafcar Amomum. Sonnerat Ind. Or. v. 2. 242. t. 137. Willd. n. 6. Rofc. n. 2. Roxb. n. 2. (A. madagafcarienfe; Lamarck Dict. v. 1. 133. Cardamomum majus; Matth. Valgr. 25, (but not Dale Pharmac. 276.) Camer. Epit. 11. f. 1. Barrel. Ic. obf. 1394. t. 971, the largeft fruit. Grana Paradifi; Ger. Em. 1542, the figure, as being copied from Matthiolus, but not the defcription. (See alfo Bauh. Hift. v. 2. 204, and Lob. Ic. v. 2. 204, where the fame error is committed, as well as in Chabr. Stirp. 128.)— Leaves lanceolate. Spikes capitate. Bracteas ovate. Lip obovate, undivided. Lateral lobes of the creft tapering, horizontal. Capfule ovate, pointed, ftriated. Seeds globular, abrupt at the bafe.—Native of marfhy ground in Madagafcar, where it was firft afcertained and figured by Sonnerat. It is cultivated at the Mauritius, and from thence was carried by captain Tennent to the Calcutta garden, where it bloffomed during the cool feafon. Dr. Roxburgh fays, "the *flowers* poffefs a confiderable fhare of fpicy fragrance, and are fhowy, the upper *bracteas*, and exterior border of the *corolla*, being red, and the large lip yellow." This writer terms the *leaves* broad-lanceolate; which does not anfwer to Sonnerat's figure, name, or defcription, but perhaps this circumftance is variable. The *flower-ftalks* rife above the ground, and are feven or eight inches high, clothed with tubular fcales. *Flowers* in a fhort crowded *fpike*, with a concave *bractea* to each, near an inch and a half long. The *capfule* and *feeds* we have already defcribed, (fee MELLEGETTA,) where fome other fpecies are mentioned, which we fhall here attempt to arrange fyftematically, but need not repeat the minute remarks there given.

3. A. *macrofpermum*. Large-feeded Guinea Amomum. (Zingiber Melegueta; Gærtn. t. 12.)—Spikes capitate. Bracteas ovate, as long as the fruit. Capfule ovate, pointed, fomewhat ftriated. Seeds obovate, with a prominent, bordered, crenate fcar.—Native of Sierra Leone, in the burying-ground of the fettlement, from whence feeds were brought us by profeffor Afzelius; but having unluckily

unluckily not obſerved the plant or its *flowers*, nor gathered more than one *capſule*, he was unable to give us any further information than what theſe *ſeeds* afford. Their flavour is very ſlightly aromatic. Their lead-coloured hue is well noticed by Gærtner, though his figure repreſents them ſcarcely half large enough. The *bracteas* appear twice the ſize of the laſt, to which unqueſtionably this ſpecies is next akin. This is *Amomum*, n. 1. of profeſſor Afzelius's MSS. The natives call it *Mabooboo*.

4. A. *Cluſii*. Long-ſeeded Amomum. (Fructus 14; Cluſ. Exot. 37, 38, with a figure. Granis Paradyſi, five Mellegetæ affinis fructus; Bauh. Pin. 413.)—Spikes capitate. Bracteas ovate, much ſhorter than the fruit. Capſule ovate, pointed, ſtriated. Seeds cylindrical, highly poliſhed, with a bordered, crenate ſcar.—The native country of this ſpecies is unknown, Cluſius's ſpecimen having been collected by an apothecary, who died in the courſe of his voyage, and left no memorandum reſpecting this point. (See MELLEGETTA for a deſcription of a ſpecimen, which we accidentally met with in a druggiſt's ſhop, in a cheſt of Great Cardamoms, *A. anguſtifolium*, if we miſtake not, and which therefore probably came from Madagaſcar.) The cylindrical, dark-brown, highly poliſhed *ſeeds*, appearing as if varniſhed, clearly diſtinguiſh it from both the two laſt. The ſhort *bracteas* in Cluſius's figure, unleſs the upper ones had been ſtripped off, afford a no leſs ſtriking diſtinction. The *ſeeds* had only a ſlight pungency from the firſt. Thoſe of our Great, as well as Cluſter, Cardamoms, are as high flavoured as ever, though at leaſt twenty-five years old.

5. A. *Grana-Paradiſi*. Grains of Paradiſe Amomum, or Mellegetta Pepper.—Spikes capitate. Bracteas ovate, rather ſhorter than the fruit; lower ones crowded. Capſule oblong, bluntly triangular, minutely hiſpid. Seeds ovate. Stipula entire, fringed. (See MELLEGETTA for the hiſtory and ſynonyms of this ſpecies.) The brown *ſeeds*, diſtinguiſhed by a peculiar and very hot flavour, are very different from the following, and the *bracteas* have a ſhort, thick, dorſal ſpine.

6. A. *grandiflorum*. Large-flowered Cardamom. Sm. Exot. Bot. v. 2. 103. t. 111. Ait. Epit. 363.—Spikes capitate. Bracteas elliptical, ſhorter than the fruit; lower ones diſtant. Capſule oblong, bluntly triangular, minutely hiſpid. Seeds ovate. Intermediate lobe of the filament entire. Stipula cloven, ſmooth.—Native of Sierra Leone. Seeds, brought by profeſſor Afzelius, have produced flowering plants in England. The *root* is perennial, woody, creeping. *Leafy ſtems* about three feet high, erect, round, ſmooth, very ſlender. *Leaves* ſeveral, elliptic-lanceolate, long-pointed, recurved, often tinged with red, very ſmooth: the long, narrow, poliſhed *ſheaths* each crowned with a ſomewhat cloven, rounded *ſtipula*, whoſe edges are quite ſmooth, not fringed with briſtly hairs, as in *A. Grana-Paradiſi*. *Flowers-ſtalks* erect, two inches high, ſtriated, downy. *Lower bracteas* elliptical, concave, ſpreading, and ſo far diſtant that the ſtalk is uſually viſible between them; *upper* much larger, though of a ſmaller proportion than thoſe of our ſecond or third ſpecies, and not above half ſo long as the *flower* or *fruit*, membranous, finely ribbed, ſcarcely ſpinous, ſomewhat coloured, permanent. *Flowers* in a ſhort, denſe, capitate cluſter, large and handſome, whether fragrant or not we have no information, but when dried, and moiſtened again, they are highly aromatic. *Calyx* roſe-coloured, above an inch long, with a blunt ſpreading point. *Outer limb* of the *corolla* of the ſame hue, twice as long; *lip* of a broad rounded kidney-ſhape, waved, plaited, crenate, ſlightly notched, but not divided, nor deeply lobed, near two inches broad, white, with a yellow ſpot at the baſe. *Stamen* white, not half ſo long as the lip, furniſhed at the bottom with two awl-ſhaped divaricated lobes, and at the top with two nearly horizontal ones, of the ſame ſize and figure, having between them a central, ſhort, rounded, quite entire lobe. The *capſule* is very like that of *Grana-Paradiſi*, in ſize, ſhape, and pubeſcence. The *ſeeds* are alſo ſimilar in ſize and ſhape to that ſpecies, but differ in being grey or lead-coloured, much leſs poliſhed, and in having a totally different flavour reſembling camphor, which they equal in warmth and pungency. As a ſtimulant, or cordial, theſe *ſeeds* appear equal to any Cardamom whatever. When the *flowers* of *Grana-Paradiſi* become known, which is now one of our greateſt botanical deſiderata, there probably will be more diſtinctive characters diſcovered between that ſpecies and the preſent.

7. A. *Afzelii*. Sweet-ſcented Amomum. Roſc. n. 8. Ait. n. 1. (A. exſcapum; Sims in Ann. of Bot. v. 1. 548. t. 13.)—Spikes capitate, of few flowers. Bracteas ſhorter than the fruit. Capſule oblong, triangular. Stipula ſmooth? Intermediate lobe of the filament cloven.—For this alſo we are indebted to Dr. Afzelius, who brought the ſeeds from Sierra Leone. From them Mr. Loddiges at Hackney raiſed plants, which flowered in his ſtove in June 1804, and were deſcribed by Dr. Sims. The original name, *exſcapum*, not being exactly correct, has been changed for one to which no lover of ſcience or of perſonal worth can object. The *leaves* are as broad as the laſt, nor does the herbage of theſe plants in general afford many diſtinctive marks. We preſume, from the figure, that the *ſtipulas* are ſmooth. The *flower-ſtalk*, though not wanting, is much ſhorter than any of the former, and there ſeem to be no more than two external *bracteas*, beſides ſome membranous ones cloſe to the flowers, apparently leſs firm and durable than uſual. The outer limb of the *corolla* is pale fleſh-coloured. *Lip* rather more oblong, and plaited lower down, than in the laſt, crenate at the edges, white, with a yellow central ſpot. *Stamen* eſſentially different from *A. grandiflorum*, in having its middle lobe in two deep acute ſegments. What we have for the *capſule* of this ſpecies is ovate, pointed, triangular, nearly or quite ſmooth, rather larger than either of the two laſt. *Seeds* obovate, dark brown, highly poliſhed, with a prominent-bordered ſcar, as in *A. macroſpermum* and *Cluſii*, totally unlike the two foregoing. Theſe *ſeeds* have ſcarcely any flavour, and are not at all aromatic. The *flowers* are fragrant only when dried, as in *grandiflorum*.

8. A. *ſtrobilaceum*. Cone-bearing Amomum.—Spikes capitate. Outer bracteas numerous, elliptical, gradually larger upwards; floral ones ſcarcely longer, membranous, ſtriated, rough at the extremity. Stipula abrupt, nearly ſmooth.—Native of Sierra Leone, from whence we were favoured with a ſpecimen by Dr. Afzelius. This has very ſlender *leafy ſtems*. The *leaves* are elliptic-ovate, pointed, very ſmooth. *Stipula* rounded, ſcarcely cloven, very ſlightly, if at all, fringed. *Flower-ſtalks* ſeveral inches high, ſmooth, covered with numerous, imbricated, elliptical, very broad, concave, ſheathing *bracteas*, gradually larger upwards, with broad dorſal points; the lowermoſt not quite an inch long, the upper two inches; all finely ſtriated, very ſmooth to the touch, of a bright cheſnut colour when dry. Within the two uppermoſt are the proper *bracteas*, accompanying the head of *flowers*, much narrower, hardly at all longer, flatter, more membranous, hairy in the upper part, abrupt with a ſmall point. Of the *flowers* we know nothing, nor are we certain of the *fruit*. The only unappropriated *capſules* of any *Amomum*, communicated from Sierra Leone

 by

by Francis Borone, (see the article RUTACEÆ,) are those of A. n. 2. of Afzelius, called by the natives *Massa-aba*, which are very likely to belong to the present plant, though we have no proof of it. These agree with the outer *bracteas* in colour and smoothness, and are ovate-oblong, only half the size of the last, with which their *seeds* very precisely accord, both in appearance and in want of flavour. Indeed they are so alike, and such a coincidence between the *seeds* of different species of *Amomum* is so unusual, that we could almost presume the *capsule* above described for *A. Afzelii*, might be a very large one of this n. 2. We do not however form any such conclusion, the seeds of *A. Clusii*, undoubtedly a distinct species from both these, having *seeds* precisely like them, only rather larger.

10. A. *villosum*. Rough-fruited Amomum. Loureir. Cochinch. 4. Willd. n. 8. Rosc. n. 5. (Globba crispa rubra; Rumph. Amboin. v. 6. 137. t. 61. f. 2.)—Spike ovate, stalked. Bracteas linear-lanceolate, elongated. Capsule globular, obscurely triangular, rough with scattered bristles. — Native of Java, Amboyna, and the Molucca islands, as well as of Cochinchina, in hilly situations. The *seeds* are exported in great quantities to China, for medical use, being, according to Loureiro, stomachic, warm and strengthening. The *root* is woody and creeping; its fibres aromatic. *Leafy stems* six feet (Rumphius says fourteen to sixteen feet) high, weak, erect, perennial. *Leaves* smooth. *Flower-stalk* four inches long, slender, reclining. *Spike* nearly ovate, with linear, imbricated *bracteas*. *Flowers* pale. *Capsule* nearly globular, half an inch in diameter, rather pulpy and sweet, reddish, clothed with numerous thick protuberances. *Seeds* angular, brown. The whole plant has an aromatic, but not powerful, odour. This description of Loureiro's is not unsuitable to the above synonym of Rumphius, to which he refers, except that the latter describes the roughness of the *fruit* as consisting of short scattered spines, or bristles.

11. A. *uliginosum*. Marsh Amomum. Retz. Obs. fasc. 3. 56. Rosc. n. 6.—Cluster stalked. Bracteas ovate-oblong. Capsule globular, obscurely triangular, shaggy. Intermediate lobe of the filament in two rounded segments.—Found by Kœnig at Raput-Nok, in Tranquebar, in shady wet situations, flowering about the middle of May. *Leafy stems*, a yard or more in height. *Leaves* smooth on both sides, with hairy *stipulas*. *Flower-stalks* somewhat curved, clothed with ovate-oblong, smooth, red scales. *Flowers* white, variegated with red and yellow. *Stamen* crowned with four lobes, the two lateral ones narrowest and smallest, the two middle ones broad and rounded. *Capsule* clothed, before it is dried, with blood-coloured *cirrhi*, or threads. *Kœnig.*

12. A. *echinatum*. Hedge-hog Amomum. Willd. n. 9. Rosc. n. 7. (Globba crispa viridis; Rumph. Amboin. v. 6. 137. t. 61. f. 1.)—Spike capitate, nearly sessile. Bracteas membranous. Capsule globose, all over spinous.—Native of Amboyna, the Molucca islands, &c. *Rumphius*. *Leafy stems*, according to *Rumphius*, ten or twelve feet high. *Leaves* twenty inches long, of the breadth of four or five fingers. *Fruit* larger than that of *A. villosum*, always of a deep green, and armed with spines like a Thorn-apple, growing in dense sessile clusters or tufts at the root. We know nothing of this species but from Rumphius, for after much perplexity and consideration, we are decidedly of opinion that *Amomum* n. 2. of Kœnig, Retz. Obs. fasc. 3. 50, cannot belong to it. See *A. maximum* hereafter.

13. A. *aculeatum*. Prickly Oval Amomum. Roxb. n. 3.—Spikes obovate, on short stalks. Bracteas lanceolate. Crest of the filament abruptly three-lobed. Capsules oval, prickly. Leaves nearly sessile, lanceolate; heart-shaped at the base.—Native of the Malay Archipelago, from whence it was brought to the Calcutta garden, and flowers freely there in April and May, ripening seed in October. The *capsule* is perfectly destitute of grooves, and its coat of a soft fleshy texture. *Roxburgh.*

14. A. *maximum*. Great Winged Amomum. Roxb. n. 4. (A. n. 2; Kœnig in Retz. Obs. fasc. 3. 50?)—Spikes oval, on short stalks. Bracteas lanceolate. Crest of one semi-lunar lobe. Capsules globose, with nine wings. Leaves stalked, lanceolate, villous beneath.—Native of the Malay Archipelago. Long cultivated in the Calcutta garden, where it blossoms in April and May, ripening seed in September and October. The *flowers* are nearly white, with a small tinge of yellow on the middle of the *lip*. The *seeds* have a warm pungent aromatic taste, not unlike the real Malabar Cardamom, (see ELETTARIA,) but by no means so grateful. *Roxburgh.* The author appears to have confused himself between *Globba crispa rubra* of Rumphius, and t. 60, of that writer, but we readily agree with him, though not exactly for the reasons he gives, that neither of these synonyms belong to his *A. maximum*.

15. A. *Rumphii*. Angular-winged Amomum. (Globba longa; Rumph. Amboin. v. 6. 134. t. 60.) — Spikes ovate, on stalks thrice their own length. Bracteas ovate. Capsule globose, with many angular-notched wings. Leaves stalked, smooth.—Native of valleys, and at the foot of mountains, in a cold, wet, clay, or stony soil, throughout the Malay Archipelago, and all the eastern parts of India. The barren *stems* are a yard high before they expand into *leaves*, after which they attain the height of twelve or fifteen feet. *Leaves* thin and smooth, two feet or two feet and a half in length, two palms broad. *Flower-stalks* a foot high, scaly, each bearing a dense, ovate, many-flowered spike, three or four inches long. *Bracteas* ovate, acute, reddish, spotted. *Calyx* with a very long three-cleft tube. *Corolla* reddish externally, with a white *lip*, soon fading. *Capsule* nearly globular, with many unequal, yellowish, irregularly and sharply toothed wings. *Seeds* black, enveloped in a silvery pulp, of a gratefully acid flavour, very fragrant, but not acrid or aromatic to the taste. *Rumphius.*

We cannot reduce this plant to any of the species of Roscoe, Roxburgh, or Kœnig. We feel indeed great scruples in referring the *Amomum* n. 2. of the latter to *A. maximum*, and shall therefore venture to propose it here as distinct, with that diffidence which must always attend the definition of a species taken up from description.

16. A. *Kœnigii*. Single-fruited Amomum. (A. n. 2; Kœnig in Retz. Obs. v. 3. 50.)—Spikes sessile. Bracteas ovate, membranous. Capsule solitary, globose, deeply furrowed, with intermediate wings, and somewhat tuberculated. Crest of three lobes; the middle one rounded, finely toothed. Leaves downy beneath.—Native of dense woods in the East Indies. *Leafy stems* two feet high. Spikes or tufts of *flowers* sessile at the root, each perfecting but one *capsule*, the size of a large cherry, containing rarely more than nine seeds.

Although we have made out a far more ample list of species, of genuine *Amomum*, than has ever been attempted before, we are aware that several may yet exist, of which imperfect traces are to be found in various authors, so that it is more likely our number should be augmented than diminished by future enquiry. This genus ought perhaps to be divided into two families, the first with spiked or racemose *flowers*, globular *fruit*, and angular *seeds*; the second with capitate *flowers*, ovate pointed *fruit*, and ovate or oblong, even *seeds*. To the first belong *A. Cardamomum* and many of of our latter ſpecies; to the latter the Cardamom tribe, compriſing the ſecond and all after it to the eighth incluſive.

AMPHIBOLE, or Hornblende. See Mineralogy, *Addenda.*

AMPHIGENE. See Leucite.

AMPHIPOGON, in *Botany*, αμφι and πωγων, as having a *beard*, or *awns*, upon *both* valves of the corolla.—Brown Prodr. Nov. Holl. v. 1. 175.—Claſs and order, *Triandria Digynia.* Nat. Ord. *Gramina.*

Eſſ. Ch. Calyx of two nearly equal valves, ſingle-flowered. Corolla of two valves; outer valve with three ſegments; inner with two; all the ſegments ſetaceous, awned, uniform.

A genus of graſſes, growing in patches, with creeping *roots*, faſciculated *ſtems*, and ſetaceous *leaves*. The *flowers* compoſe an equal *ſpike*, which ſometimes aſſumes the form of a roundiſh *head*.

Sect. 1. *Spike capitate, the outermoſt flowers abortive, whorled, conſtituting a kind of involucrum. Calyx hairy.*

1. A. *laguroides.* Hare's-tail Amphipogon.—Head globoſe. Calyx-glumes hiſpid, with hairs dilated at the baſe; outer valve twice the length of its point.—Gathered by Mr. Brown, on the ſouth coaſt of New Holland.

2. A. *turbinatus.* Turbinate Amphipogon.—Head obovate. Calyx-glumes clothed with ſhaggy hairs, ſimple at the baſe; outer valve ſcarcely longer than its point.—From the ſame country.

Sect. 2. *Spike oblong. Calyx ſmooth.*

3. A. *ſtrictus.* Stiff Amphipogon.—Calyx-glumes fringed, undivided, ſhorter than the ſmooth corolla. Awns and leaves ſtraight.—Found by Mr. Brown, near Port Jackſon, New South Wales.

4. A. *debilis.* Weak Amphipogon.—Calyx-glumes three-cleft, ſhorter than the ſmooth corolla. Awns ſtraight. Leaves rather flaccid.—Gathered by the ſame on the ſouthern coaſt of New Holland.

5. A. *avenaceus.* Oat Amphipogon.—Calyx-glumes pointed, undivided, longer than the ſilky corolla. Awns ſpreading.—Native of the ſame country as the laſt.

We have ſeen no ſpecimens, and therefore are indebted to Mr. Brown for all the above information. We would obſerve that this genus affords an exemplification of what ſpecific characters ought to be, under the hand of a maſter, with nothing ambiguous or ſuperfluous, but ſuch a contraſt of diſtinctions between all the ſpecies, as can leave no doubt in the mind of a ſtudent.

AMPHORA. Add—As a wine meaſure at Venice, contains 4 bigoncia, and a bigoncia contains 4 quantari, 116 ſecchie, or 256lbs. peſo groſo; but a bigoncia of brandy is only 14 ſecchie, or 56lbs.

AMSTERDAM, in *Geography*, an iſland in the Indian ſea, lying in S. lat. 38° 42′. E. long. 76° 54′. This iſland is of volcanic origin, and ſtill in a ſtate of inflammation. The great crater on the eaſtern ſide, now full of water, is by far the largeſt here, or, perhaps, elſewhere, and is of an aſtoniſhing ſize, conſiderably exceeding in diameter thoſe of Etna or Veſuvius. Its length from N. to S. is upwards of four miles; its breadth from E. to W. about 2½ miles; and its circumference 11 miles, comprehending a ſurface of about eight ſquare miles, or 5120 acres, almoſt the whole of which is covered with a fertile ſoil. The iſland is inacceſſible, except on the eaſt ſide, where the great crater forms a harbour, the entrance into which is deepening annually, and might, by the aid of art, be made fit for the paſſage of large ſhips. The tides run in and out at the rate of three miles an hour, and riſe perpendicularly eight or nine feet on the full and change of the moon. Their direction is S.E. by S., and N.E. by N. A northerly wind makes the higheſt tide. The water is eight or ten fathoms deep almoſt cloſe to the edge of the crater. The ſea ſupplies this iſland with excellent fiſh, particularly a kind of cod, and cray-fiſh in abundance. Neverthelefs, ſharks and dog-fiſh, of uncommon ſize, were very numerous in the ſame place. The penguin, diſtinguiſhed in the Linnæan ſyſtem by the name of "Chryſocoma," having large yellow feathers, forming two ſemi-circles over the eyes, like eyebrows, is found here in great abundance. Of the larger birds, here are alſo ſeveral ſpecies of the albatroſs, and alſo the large black petrel, or "procellaria equinoctialis" of Linnæus; the blue petrel, or "procellaria Forſteri;" and the ſtormy petrel. The ſmalleſt of the feathered tribe, inhabiting or viſiting this iſland, was the ſilver kind, or "ſterna hirundo," about the ſize of a large ſwallow or ſwift, with a forked tail. The iſland St. Paul's, lying to the northward of Amſterdam, preſented no very high land, or any riſing in a conic form. In ſir George Staunton's Embaſſy to China, we have a view and plan of the iſland of Amſterdam, and of the great crater on its eaſtern ſide.

AMUL, an ancient city of the Perſian empire, in the province of Mazanderan, ſituated in an agreeable plain at the foot of a mountain, on the banks of a river, and celebrated for a handſome bridge of twelve arches, an old fortreſs, and a palace of Shah Abbas the Great.

AMURATH (or Morad) III., in *Biography*, ſucceeded his father ſultan Selim II. in 1575, commencing his reign with cauſing his five brothers to be ſtrangled in his preſence. His reign was eventful in military tranſactions; but as he took no part in them, he is not much noticed by the Turkiſh hiſtorians. Amurath contributed to the election of Stephen Battori, as king of Poland; and this circumſtance favoured his own deſigns againſt Perſia. The invaſion of this empire by the Turks began in 1578, and after much ſlaughter, terminated in Amurath's poſſeſſion of Tauris, and three contiguous provinces of Perſia. The Krim Tartars, who revolted from the Turkiſh dominion, were reduced. In 1590, Amurath being at peace with the other powers declared war againſt the emperor of Germany, which was the cauſe of much devaſtation and bloodſhed; and the Turks triumphed in the capture of the important town of Raab, in Upper Hungary. During this war, Amurath died, in January 1596, at the age of 52. Chriſtian authors repreſent him as of a mild diſpoſition, a lover of juſtice, zealous in his religion, and a friend to temperance and order. Mod. Univ. Hiſt.

Amurath (or Morad) IV., ſurnamed *Ghazi*, or the Valiant, was ſon of Achmet I., and ſucceeded his depoſed uncle Muſtapha in 1622, in his 13th year. He loſt Bagdad at the beginning of his reign; and after many unſucceſsful attempts to retake it, he marched, in 1637, at the head of a numerous army, and after thirty days continual aſſault, and an immenſe loſs of lives, ſtormed the place. On this occaſion he ſhewed the brutal ferocity of his temper, not only by driving on his men with a ſcymetar to the attack, but by ſlaughtering 30,000 Perſians who had ſurrendered at diſcretion after the capture of the town. It is ſaid, that the only perſon who eſcaped was a famous harp-player, who requeſted the executioners to permit him to ſpeak to the ſultan before his death. When introduced into his preſence, and ordered to give a ſpecimen of his powers, he touched his inſtrument ſo ſweetly, accompanying the ſtrains with pathetic lamentations on the tragedy of Bagdad, and artful praiſes of Amurath, that the tyrant was foftened to tears, and not only faved him but the reft of the furvivors. Habits of debauchery broke down the fultan's conftitution in the prime of life, and he facrificed his life in a revel at the feaft of Bairam, in February 1640, at the age of 31. Mod. Univ. Hift.

AMUSKEAG Falls, l. 10, for acrofs *r.* a little below.

AMWELL. Add—Alfo, a townfhip of Hunterdon, in New Jerfey, containing 5727 inhabitants.—Alfo, a townfhip of Pennfylvania, in Wafhington county, having 1673 inhabitants.

ANADENIA, in *Botany*, fo named by Mr. Brown, from α, *without*, and ἀδὴν, *a gland*, becaufe the nectariferous glands, ufual in fome neighbouring genera, are wanting.—Brown Tr. of Linn. Soc. v. 10. 166. Prodr. Nov. Holl. v. 1. 374.—Clafs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juff. Brown.

Gen. Ch. *Cal.* none. *Cor.* Petals four, equal, regular, cohering by their lower part into a tube, linear, at length revolute; their fummits dilated, concave, bearing the ftamens. *Stam.* Filaments four, very fhort, inferted into the hollow near the tip of each petal; anthers roundifh, funk in the faid hollow. *Pift.* Germen with rudiments of two feeds, fuperior, ftalked, half-ovate, erect, without any gland at the bafe; ftyle cylindrical, incurved; ftigma vertical, conical. *Peric.* Follicle ftalked, of one cell, crowned with the ftyle. *Seed* folitary, compreffed, without a wing.

Eff. Ch. Petals four, regular. Stamens funk in the cavities of the limb. Nectariferous glands none. Stigma conical. Follicle of one cell. Seed folitary, without a wing.

A fhrubby genus, akin to Grevillea. (See that article.) *Leaves* either pinnatifid or lobed, their outline wedge-fhaped. *Spikes* terminal or lateral; *flowers* in pairs, each pair accompanied by a fingle *bractea*, the uppermoft fometimes earlier than the reft.

1. A. *pulchella*. Elegant Anademia.—Leaves pinnatifid, flightly hairy; lobes wedge-fhaped, three-cleft or pinnatifid at the extremity. Spikes flowering from the top downwards. Follicles glutinous.—Native of ftony hills in Lewin's land, on the fouth coaft of New Holland, where this, as well as the two following fpecies, were gathered by Mr. Brown.

2. A. *trifida*. Three-cleft Anadenia.—Leaves wedge-fhaped, triple-ribbed, without veins, three-cleft; filvery beneath: lobes entire, or the lateral ones with two or three teeth.—Found in woods, on a fandy foil, in Lewin's land. *Leaves* only the length of the finger-nail. "Perhaps a diftinct genus, the *corolla* being irregular, *ftigma* a little different from the reft, and the *follicle* woody, fplitting into two parts." *Br. in Tr. of Linn. Soc.*

3. A. *ilicifolia*. Holly-leaved Anadenia.—Leaves wedge-fhaped, veiny; filvery beneath; tapering at the bafe; pinnatifid half way down.—Found on the fandy fea-coaft of Flinder's land, on the fouth coaft of New Holland, with unexpanded *flowers*, and no *fruit*. *Leaves* an inch long. *Brown.*

ANAGNORISIS. See Catastrophe.

ANALCIME. See Zeolite.

ANALYSIS, in *Chemiftry*. The analyfis of *minerals*, including *earths*, *ftones*, and the ores of metals, and the analyfis of *organized* bodies, or *vegetable* and *animal* fubftances, have been omitted; we fhall, therefore, introduce a fummary account of thefe fubjects here, and at the fame time endeavour to fupply what has been omitted under other analogous heads.

Analyfis of Minerals.—The particular methods of analyfing different minerals and ores are given under their refpective heads: our object here is to give a fummary view of chemical analyfis in general, a fubject often referred to in the Cyclopædia, but which has been unaccountably omitted.

"The progrefs," fays Dr. Thomfon, "which the art of analyfing minerals has made within thefe laft thirty years is truly aftonifhing. To feparate five or fix fubftances intimately combined together, to exhibit each of them feparately, to afcertain the precife quantity of each, and even to detect the prefence of the weight of fubftances which do not approach the five-hundredth part of the compound, would, at no very remote period, have been confidered as a hopelefs, if not an impoffible tafk; yet this can now be done with confiderable accuracy."

Margraff of Berlin was the firft who undertook the analyfis of minerals. He was followed by Bergman and Scheele, who very much improved this department of chemiftry. The indefatigable and ingenious Klaproth fucceeded, to whom the prefent improved ftate of the analyfis of minerals is more indebted than to any other individual. To Vauquelin and Berzelius likewife we are much indebted, as well as to many other eminent living chemifts. In fhort, this interefting branch of chemiftry is ftill daily making rapid progrefs, and will doubtlefs ere long become much more perfect than it is even at prefent.

Minerals of a faline nature, and foluble in water, may be analyfed by the methods pointed out in the article Water, *Mineral Analyfis of.*

Hard ftony minerals are firft to be reduced to a ftate of powder. When they are extremely hard, they may be heated to rednefs, and then thrown into cold water, which will caufe them to crack and fly to pieces; and this procefs may be repeated, if neceffary. The mineral is then to be reduced to a coarfe powder, in a fteel or agate mortar (fee Laboratory); and when thus reduced, a given weight of it, 100 grains for example, is to be reduced in a fimilar mortar (one of agate is preferable) to an impalpable powder. The powder, after this operation, will be generally found heavier than before, owing to the abrafion of the mortar; and this addition in weight is to be carefully noticed, and allowed for. If the mortar employed was agate, the addition in weight may be confidered as filex.

Crucibles of platinium and filver, evaporating difhes of glafs or porcelain, and other apparatus and requifites, will be neceffary for the fubfequent proceffes, all which are defcribed under the article Laboratory above referred to. In the clafs of minerals commonly denominated *ftones* and *earths*, the ingredients ufually met with are, filica, alumina, zirconia, glucina, lime, and magnefia; and the oxyds of iron, manganefe, nickel, chrome, and copper. Seldom more than four or five of thefe, however, enter the compofition of a mineral at the fame time; though, to avoid repetition, we fhall fuppofe them all to exift at once.

When a mineral of the above defcription is to be analyfed, 100 grains of it in fine powder are to be mixed with three times their weight of pure potafh and a little water, and then introduced into a filver crucible, and expofed to a red heat for upwards of half an hour. Care muft be taken to ftir the mixture well till all the water be driven off, left, by the ebullition, any of the compound fhould be forced out of the crucible.

From the appearances prefented during this ftep of the operation, fome conjectures may be ufually formed refpecting the nature of the ftone, fo as to afford fome affiftance in the future fteps of the analyfis. If the matter melts completely, it may be concluded that the mineral is chiefly filiceous.

filiceous. If it remains thick and opaque, the other earths are moft abundant. If it affumes the form of a pulverulent bulky white powder, the ftone is moftly argillaceous. If the colour be dull green or brownifh, oxyd of iron is prefent. A bright grafs-green indicates the prefence of manganefe, and yellowifh-green chrome. When a ftone is aluminous and very hard, potafh acts very feebly upon it; and in this cafe, borax was ufed with great advantage by Mr. Chenevix.

The crucible being now removed from the fire, and cleaned externally, is to be placed in a porcelain capfule, and filled with water; and this is to be repeated till the whole of the matter is feparated. A portion of the compound of potafh, with the filex and alumina of the mineral, is taken up by the water, which would indeed diffolve the whole if added in fufficient quantity.

The detached matter is then to be diffolved in muriatic acid: at the commencement of the folution, an abundant precipitation takes place of a flocculent matter, which had been held in folution by the alkali, with which the acid combines. Then an effervefcence takes place from the decompofition of the alkaline carbonate formed after and during the fufion, and at the fame time the precipitate is rediffolved. The portion of matter alfo not diffolved by the water, and which had remained at the bottom in the form of a powder, is diffolved; this not being attended with any effervefcence, if it be alumina or filex; but if it contains lime, an effervefcence takes place. If the muriatic folution be colourlefs, we may conclude that it contains very little or no metallic oxyd. If its colour be purplifh-red, it is a further proof that manganefe is prefent; orange-red indicates iron; and golden-yellow, chrome.

This folution is now to be evaporated to drynefs upon a fand-bath, in a flat porcelain veffel loofely covered with paper. Towards the end of the operation, the fluid becomes gelatinous, and requires to be conftantly ftirred with a filver or porcelain rod, to facilitate the difengagement of the water and acid, and to render the exficcation uniform throughout the whole. If this precaution be not obferved, there is a rifk of a portion of the alumina, from which the acid has been expelled, remaining with the filex; and with the alumina of a portion of filex being retained in folution; by the acid on account of its not being fufficiently diffipated.

When the matter is almoft reduced to the form of a dry powder, a large quantity of diftilled water is to be poured upon it; the whole is then to be gently heated, and thrown upon a filtre. The powder remaining on the filtre is to be wafhed with water, until the laft portions added give no precipitate with folution of filver. This powder is *filex.* It is to be carefully dried between folds of blotting paper, expofed afterwards to a red heat, and weighed while warm. It ought to be a fine white powder, infoluble in acids. If it be coloured, the prefence of a metallic oxyd is indicated, which is a proof that the heat towards the end of the evaporation had been raifed too high. To remove this oxyd, the powder is to be boiled with an acid, and afterwards wafhed and dried, and the liquor muft be added to the filtered fluid above-mentioned.

The folution is then to be evaporated till its quantity does not exceed an Englifh pint. A folution of carbonate of potafh is to be poured in, till no farther precipitation takes place; and in order to render the feparation more complete, the whole fhould be boiled for a few minutes. When all the precipitate has collected at the bottom, the fupernatant liquor is to be decanted off; and water being fubftituted in its place, the precipitate and water are to be thrown upon a filtre. When the water has paffed through, the filtre with the precipitate upon it is to be placed upon fome folds of bibulous paper; and when the precipitate has acquired a little confiftence, it is to be carefully collected with an ivory knife, and mixed with a folution of pure potafh, and boiled in a porcelain crucible. If any alumina or glucina be prefent, they will be diffolved in the potafh, while the other fubftances remain untouched in the form of a powder.

The folution of alumina in the potafh is to be fuperfaturated with an acid, that is, fo much acid is to be added as is fufficient to rediffolve any precipitate that may be formed. Carbonate of ammonia is then to be added in excefs, fo as to be fenfible to the fmell. This will precipitate completely the alumina, if any be prefent, while the glucina will remain in folution. The *alumina* is to be collected on a filtre, wafhed with diftilled water, and then dried at a red heat, and weighed. To determine if it be really alumina, diffolve it in fulphuric acid, and add a fufficient quantity of fulphate or acetate of potafh; if it be alumina, the whole of it will be converted into cryftals of alum. If *glucina* be prefent in the remaining liquor, it will fall down on boiling it for fome time, fo as to diffipate the excefs of ammonia. After being wafhed and dried as before, it is to be accurately weighed.

The matter remaining undiffolved by the folution of potafh above-mentioned may confift of lime, magnefia, yttria, and the metallic oxyds. If yttria be fufpected, add carbonate of ammonia, which will diffolve the yttria, and leave the other bodies. Then let the whole be diffolved in dilute fulphuric acid, and the folution be afterwards evaporated to drynefs, fo as to diffipate any excefs of acid. A little water is to be added to the folid refiduum, which will take up the metallic fulphates and the fulphate of magnefia, but leave the fulphate of lime, which is to be dried at a red heat, and weighed; and from its weight the quantity of lime prefent may be readily eftimated. The fubftances retained in folution by the fulphuric acid may be magnefia and the oxyds of iron, manganefe, chrome, and nickel. To feparate thefe, the folution is to be diluted with a large quantity of water, a flight excefs of acid added to it; and then a folution of carbonate of potafh faturated with carbonic acid is to be poured in. The oxyds of iron, chrome, and nickel, will be precipitated, while the magnefia and manganefe will remain in folution with the carbonic acid. To feparate thefe, hydro-fulphuret of potafh well faturated with fulphuretted hydrogen is to be added to the folution, which will precipitate the manganefe in the ftate of hydro-fulphuret, while the magnefia will ftill remain in folution. The *magnefia* may then be feparated by a folution of pure potafh, and its weight eftimated after it is wafhed and dried at a red heat. To obtain the weight of the *oxyd of manganefe,* its precipitate muft be calcined with the admiffion of air to expel the fulphuretted hydrogen.

There ftill remain to be feparated the oxyds of chrome, iron, and nickel. To do this, the precipitate is boiled in fucceffive portions of nitric acid, to bring the oxyd of chrome to the ftate of acid. It is then heated for a few feconds with potafh, and after being heated the liquid is poured off. The undiffolved matters are to be wafhed with water, which wafhings are to be added to the other liquid. The chromic acid remains in folution combined with the potafh; muriatic acid is added to it, fo as to be in excefs; it is then evaporated until it affumes a green colour. If pure potafh be then added, the *oxyd* will be precipitated, and it may thus be collected, and its quantity afcertained.

The undiffolved matter of the preceding experiment may confift of the oxyds of iron and nickel. To feparate them, they

they are diſſolved in muriatic acid, and ammonia is added in exceſs. The *oxyd of iron* will be thus precipitated, and its weight may be aſcertained. The exceſs of ammonia will retain the *oxyd of nickel* in ſolution, which may be laſtly obtained ſeparately by driving off the ammonia by heat.

When the different conſtituent principles of a foſſil have been thus obtained ſeparately, their united weight ought of courſe to be equal to the original weight of the foſſil itſelf. If they correſpond, or differ only by .03 or .04 of a part, we may conclude that the analyſis has been properly performed. But if the loſs of weight be conſiderable, the analyſis muſt be repeated; and if the reſult be ſtill the ſame, it may be concluded that the ſtone has contained ſome principle either volatile or ſoluble in water, which muſt, therefore, be ſought for. A proportion of the ſtone being broken to pieces, is firſt to be expoſed to a ſtrong heat in a retort of porcelain, to which a receiver is adapted. If it contains water, or any other volatile ſubſtance, this will be collected in the receiver, and its nature and quantity may be aſcertained. But if it ſuſtain no loſs by this operation, or a loſs not equivalent to the loſs indicated by the analyſis, it is probable that it contains ſome ſubſtance ſoluble in water.

To aſcertain the quantity of *potaſh* preſent in a mineral, Vauquelin (from whom the above account of the analyſis of ſtony bodies has been chiefly extracted) recommends that the ſtone reduced to an impalpable powder ſhould be cautiouſly heated with ſulphuric acid, and the maſs digeſted with water. The ſolution properly concentrated is ſet aſide for ſome days. If cryſtals of alum make their appearance, the ſtone contains *potaſh*. If no cryſtals appear, the ſolution is to be evaporated to dryneſs, and the reſidue expoſed to a moderate red heat. It is then to be digeſted in water, and the ſolution mixed with carbonate of ammonia, and filtered. It muſt be then again evaporated to dryneſs, the reſidue expoſed to a heat of 700°, and rediſſolved. The ſolution by proper concentration will yield cryſtals, either of ſulphate of ſoda or of potaſh, which may be readily diſtinguiſhed. The preſence or abſence of potaſh may be alſo aſcertained by means of the muriate of platina.

The following method has been recommended by Roſe for detecting and diſtinguiſhing the fixed alkalies in minerals, and is eaſier than the above. He fuſed one part of the mineral with four parts of nitrate of barytes in a porcelain crucible. A ſpongy maſs of a light blue colour, and completely ſoluble in muriatic acid, was obtained. The yellow-coloured ſolution formed was mixed with a ſufficient quantity of ſulphuric acid, not only to precipitate the barytes, but to expel the muriatic acid; and the liquid was evaporated to dryneſs. The maſs was digeſted in water, and thrown upon a filtre. The ſulphate of barytes and ſilica remained behind. The ſolution was now ſaturated with carbonate of ammonia, which ſeparated all the earthy and metallic bodies, leaving in the ſolution only the ſulphates of fixed alkali and ammonia, the latter of which was then expelled by heat. The fixed alkaline ſulphate thus obtained was rediſſolved in water, and decompoſed by means of the acetate of barytes. The ſulphate of barytes formed was then ſeparated by the filtre, and the liquid evaporated to dryneſs. The other ſalt was acetate of a fixed alkali, which was expoſed to a red heat in a crucible, the charry reſidue diſſolved in water, filtered, and cryſtallized; and thus a fixed alkaline carbonate was obtained, eaſily diſtinguiſhed by its properties.

Sir H. Davy adopted ſtill a different method. He fuſed one part of the mineral with two parts of boracic acid, diſſolved the fuſed maſs in diluted nitric acid, and concentrated the ſolution to ſeparate the ſilica. The liquid was then mixed with carbonate of ammonia in exceſs, and boiled and filtered; by which means all the earthy and metallic ingredients were ſeparated. The liquid was then mixed with a ſufficient quantity of nitric acid, and evaporated till the whole of the boracic acid ſeparated. Nothing now remained but the nitric acid, combined with the alkaline conſtituents of the mineral, and with ammonia. The nitrate of ammonia was diſſipated by heat, and the nature of the alkaline nitrate left was eaſily diſtinguiſhed by its properties.

When the mineral contains *fluoric* acid, Klaproth aſcertained its preſence by heating the mineral with ſulphuric acid in a glaſs retort. The corroſion of the retort, and the ſiliceous depoſit in the water of the receiver, ſufficiently demonſtrate the preſence of that principle. To determine its quantity, the mineral was fuſed with potaſh, and the ſilica ſeparated as uſual. The remaining liquid was precipitated by means of the carbonate of potaſh; and the liquid being neutralized was mixed with lime-water. The precipitate of fluate of lime thus obtained was heated to redneſs, and from its weight the quantity of fluoric acid preſent in the mineral was eſtimated.

Thoſe foſſils in which earths are combined with acids, forming compounds not ſoluble in water, require different modes of analyſis. The earthy *carbonates* are analyſed by calcination by heat, with or without charcoal, or by ſolution in dilute nitric or muriatic acid; eſtimating the quantity of carbonic acid diſengaged, by collecting it, and diſcovering the baſe by the nature of the ſalt obtained by evaporation; or by precipitation by re-agents, and eſtimating by the ſame modes their quantities. Earthy *ſulphates* may be decompoſed by boiling with carbonate of potaſh for a conſiderable time: the ſulphuric acid unites with the potaſh, and its quantity may be eſtimated by precipitating with barytes: the carbonic acid is attracted by the earthy baſe, and the carbonate thus obtained may be decompoſed in the ſame manner as a native carbonate, or the quantity of earth which it contains may be eſtimated by its weight. *Phoſphate* of lime, which is the only earthy phoſphate that has been diſcovered, may be diſſolved in diluted nitric acid by the aſſiſtance of heat; the lime may be then precipitated by ſulphuric or oxalic acid; the phoſphoric acid remaining in ſolution may be obtained concrete by evaporation; or its quantity may be eſtimated by combining it with lead, a ſolution of acetate of lead being added for the purpoſe.

Analyſis of Ores.—Metallic minerals, in general, admit more eaſily of analyſis in the humid way than the earthy foſſils, from their being leſs hard. In the dry way alſo, their compoſition may be ſometimes aſcertained by expelling the mineralizing ſubſtance by heat, and reducing the metal to its metallic ſtate.

Proper ſpecimens of the ore, free from all foreign matters, ſhould be choſen; and if the object be to aſcertain the quantity of metal it may contain, different ſpecimens taken from different parts of the metallic vein ſhould be examined, as it often happens that different parts of the ſame vein vary much in richneſs. The ore being powdered, the general proceſs, in the *dry* way, conſiſts in calcining it at a low red heat in an earthen veſſel looſely covered, to expel the ſulphur or other volatile matter. Or this operation may be performed in an earthen retort and receiver, when the object is to aſcertain the nature and quantity of the ſubſtance expelled. The reſidual matter in either caſe being weighed, to aſcertain the loſs of weight it has ſuffered, is mixed with three times its weight of black flux, and expoſed in a crucible, to a heat ſufficiently intenſe for its reduction and fuſion. Sometimes borax, pounded glaſs, or lime, are uſed as as fluxes. The metallic matter, when the operation is well conducted, is collected in a button at the bottom of the crucible, and its nature and compofition may be afcertained in the humid way in the ufual manner by means of the proper re-agents, &c.

In fubmitting an ore to analyfis in the humid way, the general procefs is to digeft it previoufly reduced to powder in different acids. Sulphur, if prefent, is precipitated, or is fometimes partially converted into fulphuric acid. If the quantity of fulphur be large, it is beft previoufly feparated as much as poffible by roafting the ore as above. The refidual matter is then fubmitted to the action of the different acids, thefe being often applied fucceffively; fo that different metals, if prefent, are feparated by their proper folvents. The folutions afford by evaporation the metallic falts they contain, or each metal is detected in the folution by its proper teft: it is alfo precipitated by the alkalies and other re-agents, and the precipitate is reduced to the metallic ftate, as before, by the aid of fluxes and heat; or fometimes it may be thrown down at once in the metallic ftate, by another metal having a ftronger attraction for oxygen.

Thefe are almoft all the *general* rules that the analyfes of ores will admit of, as the proceffes required for different ores differ extremely from one another, and are often very complicated. We refer our readers, therefore, for the analyfis of particular earthy foffils and ores, to the different articles in the Cyclopædia, where they are defcribed.

Analyfis of organized Bodies, including vegetable and animal Subftances.—The older chemifts attempted the analyfis of organic compounds by diftillation, and thus obtained a variety of refulting fubftances equally or perhaps more complicated in their nature than the original fubftance to be analyfed. When the theory of chemiftry was changed by Lavoifier, that illuftrious chemift began to confider the compofition of organic fubftances in a proper point of view, and he endeavoured to difcover the elements of thefe bodies, and to determine their proportions. He difcovered the nature of their elements, though he was not fo fuccefsful in determining their properties. Lavoifier's principle of analyfis was to oxydize organic bodies till he converted them into binary oxyds, the compofition of which was known, and to perform the experiment in fuch a manner, that the quantity of thefe binary compounds with oxygen could be correctly determined. His mode of operating was to burn organic fubftances in oxygen gas; but this method, though juft in principle, did not enable him to determine by the balance with much accuracy, either the quantity of water or of carbonic acid formed by the combuftion; fo that his refults could be only confidered as approximations.

Some chemifts, after Lavoifier, endeavoured to determine the exact quantity of the products of dry diftillation, and to calculate from them the compofition of the body. Such was the attempt of Fourcroy and Vauquelin on the compofition of urea, and of Dr. Higgins on the acetic acid. But the compofition, and probably alfo the quantity of the products of diftillation, being only imperfectly known, it is obvious that fuch experiments, however exact, can only afford data for calculations hereafter, when the products of the diftillation come to be better examined and more accurately known. Theodore de Sauffure has analyfed alcohol and ether in Lavoifier's manner, and the refults he obtained probably approach nearer the truth than any preceding analyfis of a ternary compound. Thenard has alfo analyfed different fpecies of ether in the fame manner.

The firft grand ftep, however, towards proportion in the analyfis of organic fubftances, was made by Gay Luffac and Thenard. Thefe celebrated chemifts, in an interefting memoir on the fubject, after pointing out the difficulties and fources of inaccuracy of the methods then generally employed, gave a defcription of a new method of proceeding, by which they confidered they were able to combine the hydrogen and carbon with the utmoft quantity of oxygen with which they can unite; and thus, by proper data, to eftimate the proportion of their conftituent parts, and of oxygen exifting in the compound analyfed. The fubftance felected to furnifh oxygen was the oxymuriate of potafh, and the matter to be analyfed was mixed with this falt, and deflagrated in an apparatus contrived for the purpofe, confifting of a thick glafs tube, A, (*Plate* XXI. *fig.* 3. *Chemiftry*,) fet vertically in a fire, with a lateral tube, B, to conduct the gafes produced to a mercurial apparatus; and a cock, C, above, the ftopper of which was not perforated, but contained a depreffion, D, into which a portion of the material to be analyfed was introduced; and by turning the cock downwards, this portion fell into the tube, and was there deflagrated. E is a veffel containing ice, to keep the upper part of the tube cool. The proportion of the oxymuriate requifite to burn completely the fubftance analyfed was afcertained by previous trials in an open crucible; fo much of the falt being required, that the refidue after deflagration fhould be quite white, or at leaft not carbonaceous; and in the actual experiment a confiderable excefs of the oxymuriate was employed. The materials were then completely dried, by fubmitting them for a confiderable time to a temperature of 212°, and afterwards accurately weighed and mixed in a mortar, with a little water, fo as to form an adhefive mafs, which was divided by being thruft into a brafs mould, and the pieces fhaped by the fingers into little balls, that they might drop clean from the ftopper of the cock down into the deflagrating tube. Thefe balls were dried again at the fame temperature before they were thus burnt.

The oxymuriate of potafh was itfelf analyfed before it was ufed; and in order to infure uniformity in its compofition, a confiderable quantity of it was fufed and pulverifed, and kept for ufe. If the fubftance to be analyfed was a vegetable acid, it was combined with lime or barytes before it was mixed with the falt; and this calcareous or barytic falt was feparately analyfed, and the carbonic acid remaining united with the earth after deflagration was properly eftimated. The earthy or other incombuftible matter belonging to the fubftance to be examined was alfo feparately eftimated, by calcining this fubftance by itfelf in a platina veffel, and lixiviating the refidue.

The authors, in their memoir, have given at length all the precautions required in the management of the apparatus, both in preparing for the deflagration, and in the eftimation of the gafes obtained; and after the operation the refults of the analyfis were made out in the following manner: "The proportion of combuftible matter in the fubftance examined was previoufly found by calcination of another portion of the fame; the actual quantity of oxygen employed in the deflagration was known by that of the oxymuriate ufed; the carbonic acid was abforbed by potafh, and its carbon eftimated; the excefs of oxygen was found by fubfequent detonation with hydrogen; the hydrogen of the fubftance was prefumed to form water with all the oxygen unaccounted for; and the azote exifted in the refidual azotic gas."

Soon after the method of Gay Luffac and Thenard was publifhed, Berzelius turned his attention to the fame fubject; and after beftowing, in his admirable effay, fome juft encomiums on the merits of his predeceffors, proceeds to point out fome defects in the apparatus and methods they employed, and propofes new ones of his own. The effential

tial principle of Berzelius's method is the same as that of Gay Lussac and Thenard, *viz.* the complete combustion of the substance to be analysed with the oxymuriate of potash; but the apparatus he employed was very different, and certainly much better adapted for the purpose. It consisted of a glass tube, between one-half and five-eighths of an inch in diameter, and of a length sufficient to contain the mixture of the salt and substance to be analysed. This tube was hermetically sealed at one end, and at the other of the shape represented at A 1, (*Plate* XXI, *fig.* 4. *Chemistry*,) in order to facilitate the introduction of the mixture. When the mixture was introduced, this end was drawn into the shape A 2, in order to adapt its introduction into the small thin receiver B. C is a tube about twenty inches long, and a quarter of an inch in diameter, filled with dry muriate of lime in a state of coarse powder; from one extremity of this, a bent tube D was connected with a small mercurial gasometer E; in this was introduced a small globular glass vessel, F, containing caustic potash, with the view of absorbing the carbonic acid. All the joinings in this apparatus were made by small caoutchouc tubes, prepared by cutting thin pieces of that substance into the requisite shape, and pressing the newly cut edges together, which unite readily. The tube exposed to the fire was surrounded by a thin piece of tin plate, secured by wire to prevent its bursting. The apparatus was so managed, that by shifting the piece G the whole length of the tube could be heated in succession by the fire H, and thus the slow and uniform combustion of the whole substance be ensured. The other parts of the apparatus will be readily understood from inspection of the figures. At the end of the operation, the greater part of the water formed was found collected in the small receiver B; the remainder of course was found in the tube C, absorbed by the muriate of lime; and by subtracting the known weights previously ascertained of these portions of the apparatus, from their weights after the experiment was concluded, the quantity of water was accurately determined. The greater portion of the carbonic acid was attached to the potash in the vessel F, and its quantity ascertained by weight. The minute portion adhering to the soda derived from the oxymuriate of soda was ascertained as nearly as possible by estimation. The substances analysed were all carefully dried at 212° in a vacuum with sulphuric acid, and were generally combined with oxyd of lead. The quantity burnt was from five to eight grains of the substance with thirty or forty grains of the oxymuriate of potash. For further particulars we refer our readers to Thomson's Annals of Philosophy, vols. iv. and v.

Berzelius was induced to adopt the use of the oxymuriate of potash from the recommendation of Gay Lussac and Thenard. Before that time he had employed the brown oxyd of lead.

In the analysis of animal substances, and all compounds into which azote enters, the use of the oxymuriate of potash is very troublesome, and liable to great objections from the uncertain state of oxydation of the azote. It became, therefore, an object of the first importance to possess a substance that would oxydize hydrogen and carbon, but not azote; such a substance has been happily lately pointed out by Gay Lussac. This is the black oxyd of copper, which at a low heat, scarcely amounting to redness, parts readily with its oxygen to hydrogen and carbon, but not to azote. Berard, Dr. Prout, and others, have taken advantage of this in their recent analyses of several animal substances, as will be mentioned under their proper heads. The apparatus employed by Dr. Prout closely resembles that of Berzelius described above, but is more simple. Dr. Prout in general prefers making separate experiments for ascertaining the gaseous and aqueous products, for the former of which he uses a simple tube only; for the latter, a tube with a small ball, analogous to the receiver of Berzelius, connected with a tube filled with dry muriate of lime. See for further particulars Medico-Chirurgical Transactions, vol. viii.

Analysis *of Soils*. See Soils.

Analysis *of Mineral Waters*. See Water.

ANAMENIA, in *Botany*, a name corrupted by Ventenat, Jard. de la Malmaif. t. 22, from the Arabian appellation of some flowers of the family of *Adonis* and *Anemone*, *Anabamen*, to which the present genus is related. See Knowltonia.

ANARHICHAS, l. 6. The species of this genus enumerated by Gmelin are, *Lupus*, *Minor*, *Pantherinus*, and *Strigosus*.

Lupus; shark, or wolf-fish. (See Lupus *Marinus*.) This fish commonly frequents the deep parts of the sea, but in spring-time approaches the coasts, in order to deposit its spawn among the marine plants, &c. It is taken both in nets and by the line; and though the flesh is tolerable, its disgusting appearance prevents its being much used as food, except by the fishermen. The Greenlanders, however, eat it, both fresh and dried, and make convenient satchels of the skin, in which they keep various kinds of utensils.

Minor. Cinereous, black, with sharper cartilaginous teeth: found near Greenland.

Strigosus, with transverse dusky bands, racemose and somewhat less regular than usual; supposed by Dr. Shaw to be merely a variety: found in the British ocean.

Pantherinus; Panther wolf-fish, marked over the whole body with round brown spots. This is allied to the first species, but differs much in colour, being of a deep yellow, variegated with numerous, round, deep-brown or blackish spots of different sizes, the largest being on the back, upper part of the sides, and dorsal fin: its length is about three feet or more. A native of the Northern seas.

ANARTHRIA, in *Botany*, from ἀναρθρος, *destitute of joints*, because the stems are, in the unbranched species of this genus, destitute of knots, or articulations.—Brown Prodr. Nov. Holl. v. 1. 248.—Class and order, *Dioecia Triandria*. Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juss. *Restiaceæ*, Brown.

Ess. Ch. Male, Petals six, nearly equal. Filaments distinct. Anthers didymous, cloven at each end.

Female, Petals six, nearly equal. Styles three. Capsule three-lobed, three-celled. Seeds solitary.

The *root* is perennial. *Stems* compressed, simple, sometimes branched in a proliferous manner; when simple they are without joints, and without sheaths, having at the base vertical, equitant, two-ranked *leaves*. *Spikes* terminal, compound, each branch subtended by a sheathing deciduous *bractea*; sometimes they are simple, or the *flowers* are solitary. The *capsules* in some species form a kind of catkin, scarcely bursting. The structure of the *flowers* and *fruit* comes nearest to *Elegia*, but the want of sheaths upon the *stem*, and the equitant vertical *leaves*, make a wide difference. This genus agrees with Lyginia, (see that article,) in having twin *anthers*, but differs altogether in habit.

1. A. *scabra*. Rough-edged Anarthria.—Stems perfectly simple, flat, rough-edged as well as the leaves. Petals of the male linear; of the female the three innermost are smallest.—Found by Mr. Brown on the south coast of New Holland.

2. A. *levis*. Smooth-edged Anarthria.—Stems perfectly simple, flattish, smooth-edged as well as the leaves. Petals of

of the male elliptic-lanceolate; of the female all nearly equal.—From the fame country.

3. A. *gracilis*. Slender Anarthria.—Stems perfectly fimple, thread-fhaped, compreffed, refembling the leaves, and likewife fmooth-edged. Spike racemofe, divided. Petals lanceolate, keeled, nearly equal.—Native of the fame country.

4. A. *pauciflora*. Slender-cluftered Anarthria.—Stems fimple, thread-fhaped, compreffed, nearly refembling the folitary leaf, and likewife fmooth. Clufter loofe, of few flowers. Flower-ftalks in pairs, unequal, fhorter than the fheathing bractea.—The male plant only was gathered by Mr. Brown, on the fouthern coaft of New Holland.

5. A. *prolifera*. Proliferous Anarthria.—Stems branched in a proliferous manner, two-edged, leafy. Flowers either folitary or fomewhat fpiked.—Found in the fame part of New Holland as all the preceding. *Brown*.

ANATHO. For Anah *r.* Anna.

ANATOMY, *Picturefque*, col. 4, l. 15, for head *r.* face.

ANCHOR, in *Architecture*, &c. l. 3, for Tufcan *r.* Doric.

ANDALUSITE. See Mineralogy, *Addenda*.

ANDANTE, l. 2, *dele* or *graziofo*; l. 5, *r.* or rather *graziofo*.

ANDERSONIA, in *Botany*, received that denomination from the pen of Mr. Brown, in honour of three different botanifts of the name of Anderfon. Firft, Mr. William Anderfon, furgeon in the navy, the companion of captain Cook in two feparate voyages, during the latter of which he died. Although moft devoted to the ftudy of man, and of the animal kingdom, in thofe new and remote regions which it was his lot to vifit, he did not overlook the vegetable world. Several of his manufcript defcriptions exift in the Bankfian library, where characters of fome new genera, fince publifhed under other names, are to be found. The genus in queftion alfo ferves to commemorate Mr. Alexander Anderfon, curator of the botanic garden at St. Vincent's, fo important, in a national point of view, as a nurfery for tropical plants, and for their interchange between our feveral colonies. Thirdly, this genus is well merited by a moft affiduous and obferving cultivator and botanift, Mr. William Anderfon, F.L.S., now fuperintendant of the Apothecaries' celebrated garden at Chelfea. Let the writer of this be allowed to fubjoin to Mr. Brown's lift of thefe botanical worthies, the name of his lamented friend Mr. George Anderfon, F.L.S., whofe early death, owing to a melancholy accident, January 10th, 1817, is a real lofs to fcience. No one had paid more attention to the cultivation and diftinction of the different kinds of Britifh *Salices*, or the beautiful exotic tribe of *Pæoniæ*; on which laft fubject a paper in the Linnæan Society's Tranf. v. 12. 283, publifhed under the care of his able friend Mr. Sabine, will always evince Mr. George Anderfon's juft claim to botanical commemoration.—Brown Prodr. Nov. Holl. v. 1. 553. Dryand. in Ait. Hort. Kew. v. 1. 321.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Ericæ*, Juff. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, chaffy, coloured, in five deep, equal, lanceolate fegments, erect after flowering, permanent, accompanied at the bafe by two, or more, imbricated fcales. *Cor.* of one petal, wheel-fhaped, in five very deep, linear-lanceolate, equal fegments, nearly as long as the calyx, each of them bearded at the bafe. Nectary of five fcales, below the germen, fometimes combined. *Stam.* Filaments five, inferted into the receptacle, linear, hairy, fhorter than the corolla; anthers vertical, oblong, diftinct. *Pift.* Germen fuperior, roundifh; ftyle fimple, cylindrical, about as long as the ftamens; ftigma obtufe, crenate. *Peric.* Capfule oblong, with five furrows, five valves, and five cells, the partitions longitudinal, from the centre of each valve. *Seeds* feveral, fmall, erect, inferted into the angles of the fhort central column.

Eff. Ch. Calyx in five deep fegments, permanent, coloured, with two or more imbricated fcales at the bafe. Corolla wheel-fhaped, the length of the calyx; fegments bearded at the bafe. Stamens inferted into the receptacle. Anthers unconnected. Nectary of five fcales at the bafe of the germen. Capfule of five valves and five cells, the partitions from the middle of each valve.

This genus confifts of fmall fhrubs, with fquarrofe, half-fheathing *leaves*, no annular fcars remaining on the denudated *branches*. *Flowers* terminal, either fpiked or folitary, erect. *Receptacles* from the bottom of the capfule, fhort. *Seeds* but few brought to maturity. *Brown*.

In habit, as well as in the general ftructure of the fructification, nothing can be more abfolutely like our Sprengelia (fee that article); infomuch that no perfon could, at firft fight, form any idea of a difference between the two genera. (See alfo Ponceletia.) The prefence of fcales at the bafe of the *calyx*, fo unlike it as to be more properly termed, with Mr. Brown, *bracteas*, but in that cafe not entitled to enter into the generic character; the five nectariferous fcales, wanting in *Sprengelia*; and the bearded bafe of the fegments of the *corolla*; thefe are the diftinctive marks of *Anderfonia*. Similar differences ferve to fubdivide the original genera of Epacris and Styphelia (fee thofe articles); but, as it feems to us, the genera thence derived are better defined, and accompanied with fome diftinctions in habit. In the prefent inftance, with the greateft deference to the acute and learned author of *Anderfonia*, we fhould be inclined to reduce to one genus, under one effential character, plants fo ftrikingly alike, and fo different from all others. *Genus dabit characterem*. One thing is certain, that we are in no danger of being fufpected of wifhing, by this means, to get rid of the name *Anderfonia*, though *Sprengelia*, having been long previoufly eftablifhed, muft be preferred to it. Its character indeed muft be reformed, becaufe we were originally acquainted with but one fpecies, the only one, it feems, whofe anthers are connected. Such is the cafe with fome fpecies of *Gentiana*, but not with all. The following are Mr. Brown's fix fpecies of *Anderfonia*, ranged in two fections.

Sect. 1. *Flowers with two fcales, fpiked.*

1. A. *fprengelioides*. Spreading-leaved Anderfonia. Br. n. 1. Ait. n. 1.—Leaves fpreading; with a flat point. Flowers fpiked.—Found by Mr. Menzies, at King George's found, on the fouth-weft coaft of New Holland. Sent to Kew, by Mr. Good, in 1803. It is faid to flower moft part of the year, being treated as a green-houfe plant. We received fpecimens from Meffrs. Lee and Kennedy's green-houfe in 1814, but this little fhrub is far from being generally cultivated, nor has it yet been figured. The *ftem* is a foot or more in height, determinately branched, round, rigid, fmooth, all the *branches* covered with numerous, rigid, glaucous, feffile, fmooth, ovate, fpinous-pointed, entire *leaves*; roughifh at the edges; clafping the ftem at their bafe; each about a quarter of an inch long, permanent. *Flowers* pale rofe-coloured, fcentlefs, in denfe, fhort, leafy, terminal, upright *fpikes*, not feparately ftalked, or racemofe, as in *Sprengelia incarnata*, but otherwife very nearly refembling, in fize and colour, the elegant bloffoms of that plant.

2. A. *parvifolia*. Small-leaved Anderfonia. Br. n. 2.—"Leaves clofe-preffed; with a triangular point."—Difcovered by Mr. Brown, on the fouthern coaft of New Holland. We have not feen this fpecies. The fpinous point of each

each *leaf* is somewhat triangular in the former, though with an obtuse keel.

Sect. 2. *Flowers with many scales, solitary at the ends of small branches.*

3. A. *cærulea.* Blue Andersonia. Br. n. 3.—" Leaves moderately spreading; the young ones, as well as the calyx, externally downy."—Found by Mr. Brown, in the same part of New Holland as the last.

4. A. *squarrosa.* Squarrose Andersonia. Br. n. 4.—" Leaves prominent, divaricated and recurved, smooth; naked at the edges. Calyx and style smooth. Stem erect."—Native of the same country, where it was gathered by Mr. Brown. We have not seen this, nor either of the two preceding.

5. A. *depressa.* Procumbent Andersonia. Br. n. 5.—Leaves prominent, divaricated, twisted and recurved, downy; fringed at the edges. Calyx smooth. Style hairy in the middle. Stem depressed.—Gathered at King George's sound, on the south-west coast of New Holland, by Mr. Archibald Menzies, to whom we are obliged for specimens. Mr. Brown also met with this species in the same country. The *root* is long and tapering. *Stem* hardly a span long, much branched, for the most part in an alternate manner, thickly covered with imbricated, spreading, rigid, minutely pungent, lanceolate, variously twisted and projecting *leaves;* smooth and somewhat glaucous on both sides; dilated at the lower part, where especially the edges are fringed. *Flowers* larger than in the first species, sessile at the ends of the little lateral leafy branches, solitary, apparently flesh-coloured. *Corolla* densely clothed internally with long white hairs. *Style* just perceptibly hairy about the middle.

6. A. *micrantha.* Small-flowered Andersonia. Br. n. 6.—" Leaves close-pressed. Style downy below the middle."—Found in the same part of New Holland as the rest, by Mr. Brown. We have seen no specimen.

ANDERTON, in *Geography*, a township of Ohio, in the county of Hamilton, having 1358 inhabitants.—Also, a township of East Tennessee, having 3959 inhabitants, of whom 260 are slaves.

ANDOVER, 2d article, l. 3, *r.* 3164; 3d article, l. 2, *r.* 1259; 4th article, l. 3, *r.* 957.

ANDOVER, *East*, a township of Maine, in the county of Oxford, having 264 inhabitants.

ANDRÆA, in *Botany*, a very curious and distinct genus of Mosses, is thus named by Ehrhart, in honour of his friend JOHN GERHARD REINHARD ANDREÆ. (See that article.) This genus was intended to have been inserted by its author into the *Supplementum* of Linnæus, with the printing of which he was entrusted. (See LINNÆUS, or VON LINNE', CHARLES.) Such was the case with many others, belonging to the same natural order, and now well-established, though the younger Linnæus then forbad their admission into his book. Ehrhart called it *Andreæa*, but the above orthography is justified by many similar examples among learned botanists.—Ehrh. Hannov. Mag. for 1778, 1601: Bieträge v. 1. 15 and 180. Hedw. Sp. Musc. 47. Turn. Musc. Hib. 13. Sm. Fl. Brit. 1178. Comp. ed. 3. 153. Hooker Tr. of Linn. Soc. v. 10. 381. Musc. Brit. 1. t. 1.—Class and order, *Cryptogamia Musci.* Nat. Ord. *Musci.*

Gen. Ch. Male, terminal, bud-like. *Anth.* three to seven, nearly cylindrical, somewhat stalked, interspersed with numerous, jointed, succulent threads, swelling upwards, taller than themselves.

Female, terminal, sessile. *Sheath* of several imbricated concave scales, shorter than the *fruit-stalk*, which is cylindrical, scarcely longer than the capsule, tumid at its base. *Peric.* Capsule on a turbinate fleshy base, ovate or cylindrical, somewhat quadrangular, of four equal oblong valves, separating longitudinally, cohering at their points, under the permanent lid: column cylindrical, about as long as the valves: lid minute, conical, permanent, confining the points of the valves. *Veil* membranous, pellucid, bell-shaped, torn irregularly from its base, and finally turned to one side, crowned with the slightly prominent style. *Seeds* minute, spherical, brown.

Ess. Ch. Capsule of four valves, cohering at the summit, crowned by the permanent lid. Veil irregularly torn.

Ehrhart first removed this genus from *Jungermannia*, with which it had been confounded, and properly referred it to the order of *Musci*. But he mistook, as he well might, the valves of the *capsule* for its *fringe* or *teeth;* an error first corrected by Mr. W. Hooker, who, in the Trans. of the Linn. Soc., has first given a just and clear view of the subject. In his *Muscologia Britannica* the same author remarks, that the supposed *fruit-stalk*, as he himself had heretofore called it, is merely an elongated *receptacle*, bearing some abortive *pistils*. This is certainly true, but we conceive it nevertheless to be analogous to the more extended *fruit-stalk* of the generality of Mosses, truly wanting in *Sphagnum*. All the known species of *Andræa* are British, and amount to four.

1. A. *alpina.* Chocolate Alpine Andræa. Hedw. Sp. Musc. 49. Fl. Brit. n. 2. Engl. Bot. t. 1278. Turn. Musc. Hib. 13. Hook. Tr. of Linn. Soc. v. 10. 388. t. 31. f. 1. Musc. Brit. n. 1. t. 8. (A. petrophila; Ehrh. Beitr. v. 1. 192. Crypt. 67. Roth Germ. v. 3. 359. Jungermannia alpina; Linn. Sp. Pl. 1601. Fl. Dan. t. 1002. f. 1. Lichenastrum alpinum atro-rubens teres, calycibus squamosis; Dill. Musc. 506. t. 73. (not 83.) f. 39.)—Stems branched. Leaves obovate, obtuse with a small point, concave, ribless, imbricated every way.—Found in the crevices of alpine rocks, in Ireland, Wales, and Scotland, but, according to Mr. Hooker, not common. Ehrhart gathered it likewise in Sweden and Germany. The numerous *stems* form little dense tufts, usually of a very dark chocolate brown, but varying somewhat in hue, as well as in density. The minute *leaves* are concave, straight, neither keeled nor falcate, nor turned to one side. *Capsule* elliptic-oblong, on a paler base, raised on its white fleshy *fruit-stalk* a little above the numerous scales of the *sheath*.

2. A. *rupestris.* Dusky Rock Andræa. Hedw. Sp. Musc. 47. t. 7. f. 2. Engl. Bot. t. 1277. Hook. Tr. of Linn. Soc. v. 10. 391. t. 31. f. 2. Musc. Brit. n. 2. t. 8. (Jungermannia rupestris; Linn. Sp. Pl. 1601, excluding the synonym of Dillenius.)—Stems branched. Leaves ovate, taper-pointed, ribless; upper ones falcate.—On rocky mountains throughout Great Britain. *Hooker.* Smaller and greener than the former, with which it agrees in the want of a mid-rib; but differs from it in the tapering, more or less curved, *leaves*. All botanists confounded this species with the following, till Dr. Roth distinguished them chiefly by the presence of the mid-rib in that species.

3. A. *Rothii.* Black Mountain Andræa. Mohr Crypt. Germ. 385. t. 11. f. 7—9. Hooker Tr. of Linn. Soc. v. 10. 393. t. 31. f. 3. Musc. Brit. n. 3. t. 8. Engl. Bot. t. 2162. (A. rupestris; Fl. Brit. n. 1. Turn. Musc. Hib. 14. Lichenastrum alpinum nigricans, foliis capillaceis reflexis; Dill. Musc. 507. t. 73. (not 83.) f. 40.)—Stems slightly branched. Leaves lanceolate, keeled, curved to one side, single-ribbed. Scales of the sheath without a rib.—This, according to Mr. Hooker, is common on alpine rocks. We have often gathered it in dry exposed situations, in Westmoreland, as well as Scotland, where it composes little dense tufts, of a very dark or blackish hue. The same is

is alſo found in Germany, and doubtleſs in other mountainous parts of Europe. Like both the foregoing, it bears *capſules* in the ſpring and ſummer. The preſence of a ſtrong rib in the *leaves* clearly diſtinguiſhes it from thoſe ſpecies, though the paler, blunt, and more oblong, ſcales of the *ſheath* have no rib. The *ſtems*, generally almoſt ſimple, are occaſionally much branched, as in *Engl. Bot.*

4. A. *nivalis*. Tall Slender Andræa. Hook. Tr. of Linn. Soc. v. 10. 395. t. 31. f. 4. Muſc. Brit. n. 4. t. 8. Engl. Bot. t. 2334. (not 2507.)—Stems branched. Leaves looſely imbricated, lanceolate, ſingle-ribbed, curved towards one ſide. Scales of the ſheath ſimilar.—Gathered by Mr. Hooker and Mr. Borrer, on rocks upon the higheſt ſummit of the Scottiſh mountain Ben Nevis, at the eaſtern end. It is, like all the reſt, perennial, bearing *capſules* in ſummer.

This is by far the talleſt *Andræa* known, being three inches high, or more, forming rather lax olive-brown tufts, tinged with a chocolate-colour, of which laſt hue are the *capſules*, whoſe ſubſtance is ſtrongly reticulated. The ſcales of the *ſheath* being of the ſame lanceolate figure, furniſhed with a mid-rib, as the *leaves*, clearly defines the ſpecies. Mr. Hooker has obſerved this moſs on the granite rocks of the moſt elevated of the Swiſs alps, retaining all the characters of the Scottiſh ſpecimens.

ANDREW, *Knights of*, &c. l. 12, *r.* Favin; col. 2, l. 28, *r.* commiſſioner; l. 29, *r.* little for litter.

ANDROMACHA, l. 1, *r.* Zygæna.

ANDRONICUS II., PALÆOLOGUS, in *Biography*, ſon of Michael Palæologus, ſucceeded to the Greek empire in 1283. He is characterized as learned and virtuous, but feeble in his conduct, and abjectly ſuperſtitious. His old age was embittered by blindneſs and neglect; and having aſſumed the name of Father Antony, he cloſed his unquiet life four years after his abdication, A.D. 1332, aged 74.

ANDRONICUS III., *Palæologus*, the younger, was the ſon of Michael, eldeſt ſon and colleague of the elder Andronicus. With his grandfather he was a favourite, on account of his wit and beauty; and he was thus led into habits of intemperance and debauchery, which involved him in difficulties and diſgrace. Having compelled his grandfather to abdicate in 1328, he reigned alone, and contended againſt the Bulgarians and Turks, with the latter of whom he ſigned an ignominious treaty, relinquiſhing to them all the places which they had taken in Aſia. At length, exhauſted by his vices, he died in his 45th year, A.D. 1341. Gibbon.

ANDROPHYLAX, in *Botany*. See WENDLANDIA.

ANEILEMA, from α, *without*, and ειλημα, *an involucrum*, this genus being ſeparated by Mr. Brown, Prodr. Nov. Holl. v. 1. 270, from COMMELINA, (ſee that article,) on account of the want of the large folded *involucrum*, or rather *bractea*, which in *Commelina* contains a conſiderable number of flowers; whereas in *Aneilema* the infloreſcence is ſcattered, ſomewhat panicled. The difference between the two reſides therefore in this part of the plant, and not ſtrictly in the fructification.

The known ſpecies of *Commelina* referred by Mr. Brown to *Aneilema* are, *vaginata*, *nudiflora*, and *ſpirata* of Linnæus, *medica* of Loureiro, Vahl Enum. v. 2. 175. n. 28; and *gigantea* of Vahl, n. 34, found by Mr. Brown, in the tropical part of New Holland. To theſe the author adds nine new ſpecies, found by himſelf, either in New South Wales, or the warmer parts of New Holland, one of them only being deſcribed from the collection made in the latter country by ſir Joſeph Banks. Some have ſmooth *filaments*, others bearded ones. It is ſuſpected that *Pollia* of Thunberg may not be generically diſtinct from theſe; but the *fruit* in our ſpecimen is evidently a *berry*, according to Thunberg's deſcription, and remarkable, even after having been dried more than thirty years, for its bright blue colour. (See POLLIA.) The habit and infloreſcence are indeed, as Mr. Brown obſerves, ſimilar to his *Aneilema*. Whether *Cartonema* of this author be diſtinct, we do not preſume to judge, having ſeen no ſpecimen. In the regularity of its *flowers*, and the equality of their *ſtamens*, it differs from *Commelina* and *Aneilema*, and agrees with *Tradeſcantia*, but differs from the latter in ſeveral particulars pointed out by Mr. Brown, beſides its ſpiked infloreſcence.

ANEMIA, a genus of ferns, ſeparated from OSMUNDA, (ſee that article,) by Dr. Swartz, and thus named from ανειμων, *naked*, or *not covered*; becauſe its capſules are deſtitute of all covering or *involucrum* whatever. — Swartz Syn. Fil. 155. Willd. Sp. Pl. v. 5. 89. Ait. Hort. Kew. v. 5. 498.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, ſect. 2, *ſpuriè gyratæ*.

Eſſ. Ch. Capſules ſomewhat turbinate, concentrically ſtriated at the top, burſting laterally, ſeſſile on one ſide of a compound linear receptacle. Involucrum none.

The habit of this genus is different from *Oſmunda*, and extremely remarkable, on account of its compound ſpikes, always perfectly diſtinct from the leafy part of the frond, and generally ſituated in pairs, on long ſtalks, on the common ſtalk at the baſe of that leafy part. Such at leaſt is the caſe with the whole of the firſt ſection; in the ſecond, the fruit-bearing ſtalks are radical and ſolitary. It is cloſely related to BOTRYCHIUM, to be deſcribed hereafter; but that has globular capſules of two diſtinct valves, neither ſtriated nor annulated. Their receptacles, indeed, exactly agree; and the ſtriæ are ſo obſcure in *Anemia*, that we are much inclined to unite it with *Botrychium*.

Sect. 1. *Panicles of ſpikes in pairs, ſtalked, at the baſe of the leaf.*

1. A. *phyllitidis*. Broad-leaved Anemia. Swartz n. 1. Willd. n. 1. (Oſmunda phyllitidis; Linn. Sp. Pl. 1520. O. lanceolata et ſubtilitèr ſerrata; Plum. Fil. 133. t. 156. O. racemifera, phyllitidis folio vix crenato; Petiv. Fil. n. 163. t. 8. f. 15.)—Frond pinnate; leaflets ovato-lanceolate, pointed, finely ſerrated, ſmooth as well as the common ſtalk. — Native of South America and the Weſt Indies. Brought from Braſil, by the late ſir George Leonard Staunton, in 1793. A very handſome fern, eighteen inches or two feet high, its tufted *root* producing ſeveral upright *fronds*. Each of theſe conſiſts of a ſmooth, rather ſlender, ſtraight *common ſtalk*, bearing at the top an upright ſimply pinnate *leaf*, of from four to eight pair of ſmooth, veiny, bluntly ſerrated, ſomewhat ſtalked, *leaflets*, beſides an odd one; their length from two to four inches. Cloſe to the baſe of this pinnate leaf, on the upper ſide, or front, are ſtationed a pair of equal, long-ſtalked, triply pinnate *ſpikes*, of minute, pale, very numerous, *capſules*, ranged in double rows along one ſide of the linear compound ſtalk, or *receptacle*, the *common ſtalk* of the whole being ſomewhat hairy. Theſe compound *ſpikes* always riſe a little above the point of the terminal *leaflet*.

2. A. *hirta*. Rough-leaved Anemia. Swartz n. 2. Willd. n. 2. (Oſmunda hirta; Linn. Sp. Pl. 1520. O. hirſuta, lonchitidis folio; Plum. Fil. 134. t. 157. O. ſpicis geminis; Petiv. Fil. n. 164. t. 14. f. 5. Lonchitis hirſuta florida; Plum. Amer. 18. t. 26.)—Frond pinnate; leaflets oblong-lanceolate, hairy, finely ſerrated, and ſomewhat cut; very unequal at the baſe. Stalks all hairy.—Native of the Weſt Indies. Smaller in every part than the laſt, being ſcarcely above a foot high; and diſtinguiſhed alſo by the great dilatation of the upper ſide of each *leaflet*, at its baſe. The upper ones run into a ſort of pinnatifid elongated point.

point. Both ſides of the *leaflets* are hairy in our ſpecimen, as Plumier deſcribes them; though Willdenow and Swartz call them ſmooth. The denſe, twin, hairy, twice-compound *ſpikes* uſually riſe a little above the *leaf.*

3. A. *blechnoides.* Many-leaved Anemia.—Frond pinnate, longer than the ſpikes; leaflets numerous, parallel, oblong, obtuſe, ſerrated, ſmooth; rectangular on their upper ſide at the baſe.—Brought from Braſil, by the late ſir George Leonard Staunton, from whom we received ſpecimens in 1793. We cannot find any figure or deſcription of this ſpecies, though a very remarkable one. The *common ſtalk*, in its naked part, is ſmooth. The *leaflets* are about forty pair, parallel and crowded; the lowermoſt an inch and a quarter long, and oppoſite; upper ones gradually ſmaller and alternate; all together forming a linear-oblong *frond*, eighteen inches in length, with a ſlightly hairy *common rib*, which, by a hairy bud at the ſummit, ſeems as if it would take root there. *Spikes* lax, twice compound, meaſuring with their ſlightly hairy ſtalks, about two-thirds of the length of the leafy part. Their ſubdiviſions are extremely narrow.

4. A. *oblongifolia.* Oblong-leaved Anemia. Swartz n. 3. Willd. n. 3. (Oſmunda oblongifolia; Cavan. Ic. v. 6. 69. t. 592. f. 2.)—Frond pinnate; leaflets obovate, obtuſe, dilated at the upper angle of their baſe, fringed. Stalks ſmooth.—Gathered by Louis Née at Panama. Several ſtalked *fronds*, hardly ſix inches high, ſpring from the hairy crown of the tufted *root;* ſome of them barren. The *leaflets* of each are about ten pair, rather alternate than oppoſite, half an inch long, rounded at their extremity, as well as at the dilated angle. Both *ſpikes* riſe much higher than the leafy part, on ſlender *ſtalks*, and appear to be rather denſe. We know this and the following from the work of Cavanilles only.

5. A. *humilis.* Dwarf Anemia. Swartz n. 4. Willd. n. 4. (Oſmunda humilis; Cavan. Ic. v. 6. 69. t. 592. f. 3.)—Frond pinnate; leaflets obovate-wedgeſhaped, abrupt; crenate at the extremity; hairy beneath. Common ſtalk hairy.—Native of Tabago, an iſland on the Mexican coaſt, near Panama. Of more humble ſtature than the laſt, and further diſtinguiſhed by the wedge-like ſhape of its *leaflets*, which are fewer, rather larger, crenate, and not fringed. The *ſpikes* are much ſmaller than in the foregoing, raiſed high upon ſlender ſmooth ſtalks.

6. A. *filiformis.* Slender Hoary Anemia. Swartz n. 5. Willd. n. 5. (Oſmunda filiformis; Lamarck Dict. v. 4. 652.)—Frond pinnate, downy and hoary; leaflets oblong-wedgeſhaped, obtuſe; jagged at the extremity. Common ſtalk hairy.—Gathered in South America by Mr. John Fraſer, who is reported to have communicated a ſpecimen to Lamarck. We have never ſeen this plant. It is deſcribed as eight or nine inches high, beſprinkled in every part with white or hoary hairs. *Leaflets* ſtriated very copiouſly and conſpicuouſly beneath. *Spikes* ſlender, compound, on capillary ſtalks, riſing high above the leaf. *Savigny in Lamarck.*

7. A. *tenella.* Delicate Anemia. Swartz n. 6. Willd. n. 6. (Oſmunda tenella; Cavan. Ic. v. 6. 69. t. 592. f. 1.)—Frond pinnate; leaflets lanceolate, deeply pinnatifid, with linear-awlſhaped fringed ſegments. Common ſtalk ſmooth.—Found by Louis Née, on the trunks of trees in Quito, eſpecially on mount St. Antonio. A ſlender delicate fern, about ſix inches high, whoſe *leaflets* have many fine, acute, partly oppoſite, ſegments. The *ſpikes* are ſomewhat taller than the leaf.

8. A. *hirſuta.* Hairy Anemia. Swartz n. 7. Willd. n. 7. Ait. n. 1. (Oſmunda hirſuta; Linn. Sp. Pl. 1520. O. mollitèr hirſuta, et profundè laciniata; Plum. Fil. 139. t. 162. O. ſpicis geminis villoſa; Petiv. Fil. n. 165. t. 8. f. 16. Lunaria elatior, matricariæ folio, ſpicâ duplici; Sloane Jam. v. 1. 71. t. 25. f. 6.)—Frond pinnate, hairy; leaflets deeply pinnatifid; ſegments tapering downwards; obtuſe and jagged at the extremity.—Native of the Weſt Indies, growing on rocks. About a foot high, hairy all over, except the *ſpikes* and their *ſtalks*. Several of the *fronds* are barren, which we preſume is the caſe with moſt of the neighbouring ſpecies. Each *leaflet* is about an inch and a half long, with many narrow-wedgeſhaped, deep, ſtriated ſegments, hairy on both ſides, and ſharply notched. Each *ſpike*, near three inches long, is doubly pinnate, with flat cloſe ſegments, broader than in moſt of the genus, and the *capſules* are repreſented by Plumier as marginal, and blackiſh, with much more intermediate ſpace than uſual on each ſegment. Willdenow adverts to this circumſtance, and the hairineſs of the common ſtalk, as indicating a ſpecific difference between Plumier's plant and what he had examined. Specimens from the Weſt Indies, and from Dr. Swartz, certainly agree with Sloane's plant, and like that, have a ſmooth common ſtalk; but having ſeen none anſwering to Plumier's, we decline attempting a ſpecific definition, from his figure. He is, however, the original authority for *Anemia*, or *Oſmunda, hirſuta*, and Petiver copies him; but Sloane's ſynonym muſt be referred to the new ſpecies, if ſuch be eſtabliſhed.

9. A. *deltoidea.* Triangular Anemia. Swartz n. 8. Willd. n. 8. (Oſmunda deltoidea; Cavan. Ic. v. 6. 70. t. 593. f. 1.)—Frond triangular, pinnate; leaflets deeply pinnatifid, with rounded, crenate, crowded ſegments; glaucous above; hairy beneath. Common ſtalk hairy at the upper part.—Found on rocks in the plain of Buenos Ayres, by Louis Née. A ſpan high, with broader and rounder ſegments of the *leaflets* than any of the foregoing. The diviſions of the common *receptacle* of the *ſpike* alſo are broader, and more rounded, than uſual, approaching to thoſe in Plumier's plate of the laſt.

10. A. *villoſa.* Shaggy Anemia. Willd. n. 9.—"Frond doubly pinnatifid, oblong, ſhaggy on both ſides; ſegments roundiſh-ovate, obtuſe, entire; the lower ones obſcurely three-lobed. Common ſtalk ſhaggy."—Gathered by Humboldt and Bonpland in South America. *Common ſtalk* ſix inches high, or more, roundiſh, clothed with ſhort ruſty wool. *Frond* three or four inches long, covered with ruſty hairs; the upper ſegments roundiſh-ovate, very blunt, and entire; lower with two or three ſlight lobes; *common rib* denſely ſhaggy. *Spikes* triply compound, denſe, taller than the leaf, with hairy ribs and ſtalks. Apparently akin to the following, but the outline of the *frond* is oblong, not triangular, and the *rib* ſtraight, not zigzag. *Willdenow.*

11. A. *flexuoſa.* Zigzag Anemia. Swartz n. 9. Willd. n. 10. (Oſmunda flexuoſa; Lamarck Dict. v. 4. 652.)—"Frond doubly pinnatifid, triangular, downy; ſegments oblong, obtuſe, nearly entire; common rib zigzag. Common ſtalk downy."—Suppoſed to be a native of Peru, but for this there is no direct authority. We have ſeen no ſpecimen. Savigny in Lamarck deſcribes this ſpecies as related, in many reſpects, to *A. hirſuta*, n. 8, but the principal *leaflets* are ſimply pinnatifid. The *ſtalks* are about a foot high, ſemi-cylindrical, channelled, beſprinkled with rather rigid, tawny hairs. *Fronds* from five to ſeven inches long, with narrow, deeply pinnatifid, *leaflets;* their ſegments oval, or ſomewhat oblong, nearly oppoſite, very blunt, decurrent, ribbed, entire, or ſlightly notched; paler beneath.

 The

The summit of each *frond* is obtuse, and simply pinnatifid. *Spikes* triply and minutely compound, with linear short segments; their *stalks* hispid.

12. A. *tomentosa*. Downy Anemia. Swartz n. 10. Willd. n. 11. (Osmunda tomentosa; Lamarck Dict. v. 4. 652.)—Frond doubly pinnate, oblong, clothed with tawny down; leaflets crescent-shaped, entire; the lower ones bluntly pinnatifid. Common stalk downy. — Found by Commerson at Buenos Ayres. A pretty species, seven or eight inches high, exhaling the smell of myrrh, and covered all over with fine, long, cottony, tawny down. The *common stalk* is rather stout, twice the length of the leafy part, which is about two inches broad. *Spikes* compound, on slender decurrent *stalks*. *Savigny*.

13. A. *fulva*. Tawny Branching Anemia. Swartz n. 11. Willd. n. 12. (Osmunda fulva; Cavan. Ic. v. 6. 70. t. 593. f. 2.)—Frond doubly pinnate, triangular, somewhat downy; leaflets elliptic-oblong, bluntly pinnatifid, or serrated. Spikelets partly whorled. All the stalks hairy. —Gathered by Louis Née, on the hill called *Pan de Azucar*, or the Sugar-loaf, thirty-two miles from Monte Video. Above a foot high, with very hairy *stalks*, and a broad *frond*, doubly pinnate throughout, except at the very top. *Leaflets* three-quarters of an inch long, and one-third as broad, uniform, somewhat decurrent. The *spikes* seem to be simply compound, their *branches* horizontal, linear, deeply notched, many of them in whorls of three or four together; their *common stalks* and *ribs* hairy, sending off one or three lateral branches, which we have seen in no other species.

14. A. *adiantifolia*. Maiden-hair-leaved Anemia. Swartz n. 13. Willd. n. 13. Ait. n. 2. (Osmunda adiantifolia; Linn. Sp. Pl. 1520. O. filiculæ folio major; Plum. Fil. 135. t. 158. O. adianti nigri facie; Petiv. Fil. n. 167. t. 9. f. 1. Adiantum saxosum floridum; Plum. Amer. 29. t. 43.)

β. Willd. (A. asplenifolia; Swartz n. 10. Osmunda asplenifolia; Savigny in Lamarck Dict. v. 4. 652.)

Frond doubly or triply pinnate, triangular; leaflets obovate, sharply toothed at the end, partly notched, hairy, as well as their common rib. Common stalk nearly smooth. Spikelets digitate.—Native of the West Indies, particularly of Hispaniola, in dry rocky or stony places. Its large handsome, shining, striated *frond* bears considerable resemblance to our common *Asplenium Adiantum-nigrum*, to which, and not to the real genus *Adiantum*, the specific name alludes. The naked *stalk* is often a foot high; the length of the leafy part almost as much. The copious *leaflets* measure about half an inch, and are strongly striated; convex above; paler, and rather most hairy, beneath; all their stalks hairy. *Spikes* somewhat panicled; their ultimate divisions radiating, or finger-like, linear, flat. *Capsules* of a light shining brown.

Sir Joseph Banks has favoured us with several specimens of a variety of this fern, gathered at Campechy by Houstoun, which differs chiefly in being not above a span high, with a less compound *frond*, and having sometimes, from the same *root*, much narrower, almost linear, *leaflets*. The *common stalks* are also rather more hairy, and the *spikes* more compact. It is nevertheless an evident variety, and probably the β of Willdenow, to the characters of which it answers.

Sect. 2. *Panicles of spikes on radical stalks*.

15. A. *bipinnata*. Great Radical Anemia. Swartz n. 14. Willd. n. 14. (Osmunda bipinnata; Linn. Sp. Pl. 1521. O. latis crenis incisa; Plum. Fil. 133. t. 155.) — Frond oblong, doubly pinnate; leaflets elliptical, acute, entire. Spikes on radical stalks, doubly pinnate; their ultimate segments densely crowded.—Gathered by Plumier in a dry stony tract of land in Hispaniola. We find no good authority for its having ever been found elsewhere, nor by any other botanist. Linnæus adopted this species entirely from Plumier, between whose figure and description there is a strange contrariety. The plate, drawn and engraved by himself, evidently exhibits the barren *fronds* as doubly pinnate, each of the numerous primary divisions being composed of a rather smaller number, (about thirty,) of oval or ovate, somewhat decurrent *leaflets*, except a few of the uppermost, which run into a terminal serrated point. His description says, "the tufted *root* bears seven or eight *ribs*, about a foot and a half long, garnished nearly throughout their whole length, with longish, narrow, pointed, yellowish-green *leaves*, but slightly furrowed, and all cut into rather broad, and somewhat pointed notches." As the author is known to have lost many of his specimens, we can only suppose this description was made from too slight a view of his own drawing, without a re-examination of the plant, which he seems to have gathered but once. A few taller and more slender *stalks*, springing also from the root, and doubly pinnate in the first instance, bear innumerable *capsules* crowded into dense masses, which we presume to be composed of narrow compound segments, like the other species. At least the analogy of *A. filiculifolia* hereafter described justifies this supposition.

16. A. *aurita*. Auricled Radical Anemia. Swartz n. 15. Willd. n. 15. (Osmunda aurita; Swartz Ind. Occ. 1578.) — "Frond pinnate; upper leaflets simple, ovate, obtuse, finely toothed, unequally wedge-shaped at the base; lower ternate. Spikes compound, on radical stalks; spikelets digitate."—Found by Dr. Swartz, on the sides of lime-stone rocks, in the interior part of Jamaica. *Roots* creeping, slender. *Common stalks* several, crowded, about a span high, slender, most hairy and scaly at the base; downy and roughish upwards. Each bears an erect *frond*, six inches in length; doubly pinnate in its lower part, the *leaflets* small, roundish, the terminal ones larger and rhomboidal: the upper part is simply pinnate; *leaflets* oblong, oblique at the back, dilated on the upper edge, at the base, into an obtuse angle: all the *leaflets* are coriaceous, smooth and shining, slightly convex, streaked with radiating veins; finely crenate at the margin; more opaque beneath. *Clusters*, (or rather *spikes*,) compound, on radical *stalks*, close to, and resembling, those of the barren *fronds*; their branches compound, nearly opposite, spreading; their ultimate segments digitate, lanceolate, acute, bearing on the upper side roundish-ovate bivalve *capsules*, with concentric streaks on their apex, and interspersed with minute scales or hairs. *Swartz*. By this description, the genus is put out of all doubt.

17. A. *verticillata*. Whorled Radical Anemia. Swartz n. 16. Willd. n. 16. (Osmunda verticillata; Linn. Sp. Pl. 1520. Plum. Fil. 137. t. 160. Petiv. Fil. n. 171. t. 12. f. 4.)—Frond three-branched, triply pinnate; leaflets elliptic-oblong, acute, serrated; terminal ones lanceolate, pointed. Spikes in whorled branches, on radical stalks.— Gathered once only, in the forests of Hispaniola, by Plumier, nor does it appear that any other botanist has even seen this species, his work having been Linnæus's sole authority. The genus, therefore, can only be presumed from analogy, but we think this analogy as fair as in any similar instance. The tufted *root* sends up many barren *fronds*, which are supported by long rough *stalks*, and three-cleft in the first instance, then doubly pinnate; their common outline pentagonal, a foot in diameter; their *leaflets* usually near

near an inch long. The height of each *frond*, with its *ſtalk*, is about two feet. A few rather more ſlender *ſtalks*, from the root, bear each a long interrupted, whorled *ſpike*, with ſix or eight drooping, obtuſe, denſe, blackiſh *branches*, in every whorl, above an inch long, on capillary ſtalks, but how they are ſubdivided we have no information. Plumier compares them to little black caterpillars.

18. A. *filiculifolia*. Hemlock-leaved Radical Anemia. Swartz n. 17. Willd. n. 17. (Oſmunda filiculifolia; Linn. Sp. Pl. 1521. O. filiculæ folio altera; Plum. Fil. 138. t. 161. O. cicutæ folio; Petiv. Fil. n. 170. t. 9. f. 3.)—Frond three-branched, pinnate, pinnatifid; ſegments wedge-ſhaped, decurrent; notched at the extremity. Spikes panicled, on radical ſtalks.—Found but rarely by Plumier, in the foreſts of Hiſpaniola. A ſpecimen, without any indication from whence it came, is preſerved in the Linnæan herbarium, and referred to *Oſmunda* (*Anemia*) *bipinnata*, (ſee n. 15.) Linnæus appears to have had it when he wrote the firſt edition of Sp. Pl., but all he ſays of either of theſe ſpecies is entirely taken from Plumier, who is the primary authority for both. *A. filiculifolia* varies from five inches to above a foot in height. The *barren fronds* have ſlender, roughiſh, rather long, *ſtalks*, and are nearly pentagonal in their outline; having three principal branches, which are firſt pinnate, then more or leſs deeply pinnatifid and cut, always in a wedge-like manner; they are hairy on both ſides. The common *mid-rib* is winged. From the ſame tufted *root* grow one or more rather taller *ſtalks*, each bearing a triply-compound, ſlightly hairy, *panicle*, or compound *ſpike*, whoſe linear ultimate ſegments are laden, on one ſide, with rather large, and not very numerous, *capſules*, each having a very diſtinct, brown, ſhining, radiated top, below which is a lateral fiſſure. The engraving of Plumier gives no idea of the ſize or nature of theſe *capſules*, nor of their arrangement, ſo that we may ſuppoſe him equally incorrect with regard to our fifteenth or ſeventeenth ſpecies.

Dr. Swartz, Syn. Fil. 158, points out, as a probable ſpecies of this genus, *Filicaſtrum americanum minus, foliis ramoſis hirſutis*, Ammann in Comment. Petrop. v. 10. 295. t. 19. This was found by Dr. Houſtoun at Vera Cruz, and however unlike the figure may ſeem to Plumier's t. 161, our ſpecimen mentioned, and partly deſcribed, under the laſt ſpecies, ſerves to prove them, at leaſt in our opinion, one and the ſame plant; for it explains the inaccuracies of both figures, and is intermediate between the two in the ſtructure of the barren *frond*. We cannot doubt its being one of Houſtoun's ſpecimens. The panicled *infloreſcence* agrees with Ammann's figure, but the detail of that figure is no leſs incorrect than Plumier's, ſo that nothing preciſe can be gathered from either.

ANEMOMETER, col. 2, for IX. inſert VIII. No. 3.

ANEMONE, in *Botany*, has received ſo much improvement and illuſtration from the pen of profeſſor De Candolle, that our former article is by no means ſufficient to give a complete, or an accurate, idea of this genus. Linnæus indeed had but an imperfect acquaintance with its ſpecies, nor do all authors agree with him as to its generic limits. M. De Candolle however excludes HEPATICA only. (See that article hereafter.) His view of the ſubject cannot but prove inſtructive and intereſting.—De Cand. Syſt. v. 1. 188. Linn. Gen. 279. Schreb. 375. Willd. Sp. Pl. v. 2. 1272. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 580. Prodr. Fl. Græc. Sibth. v. 1. 374. Ait. Hort. Kew. v. 3. 336. Purſh 386. Juſſ. 232. Tourn. t. 147. Lamarck Illuſtr. t. 496. Gærtn. t. 74.—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Cand.

Gen. Ch. *Cal.* none, except a three-leaved, variouſly cut, involucrum. *Cor.* Petals from five to fifteen, ovate or oblong. *Stam.* Filaments numerous, capillary, not half the length of the corolla; anthers two-lobed, erect. *Piſt.* Germens numerous, collected into a head, ſingle-ſeeded; ſtyles tapering; ſtigmas blunt. *Peric.* none. *Recept.* globoſe or oblong, covered with ſmall excavations. *Seeds* numerous, crowded, roundiſh, pointed with the permanent ſtyle, which in ſome is lengthened out into a feathery tail.

Eſſ. Ch. Involucrum three-leaved, cut. Petals from five to fifteen. Seeds numerous, capitate.

This genus conſiſts of perennial herbs. *Roots* (or perhaps ſubterraneous *ſtems?*) either tuberous, or horizontally creeping, or ſimply fibrous. *Leaves* radical, ſtalked, ſimple (or compound), lobed or cut. *Flower-ſtalk* radical, bearing at the ſummit an *involucrum* of three, rarely but two, leaves, variouſly cut, but conformable in general to the proper foliage. From this *involucrum* proceeds uſually one or many ſimple, naked, ſingle-flowered *ſtalks*; ſome apparently cauleſcent ſpecies have one ſuch leafleſs *ſtalk*, and, beſides, a ſort of branch, bearing another *flower-ſtalk*, accompanied by a two-leaved *involucrum*. The *flowers* are inodorous, very variable, and readily become double.

The recent plants are acrid, and raiſe bliſters in the ſkin, if applied externally: internally they are poiſonous in ſome degree, though ſeveral have been preſcribed in chronical ophthalmia, and venereal caries of the bones.

The forty-five ſpecies, with which we are at preſent acquainted, inhabit paſtures, hills, woods or thickets, of temperate climates, principally in the northern hemiſphere; the *Pulſatillæ* are found on rough expoſed hilly fields; *Preonanthi* on the loftieſt mountains; *Pulſatilloideæ* at the Cape of Good Hope; *Anemonantheæ* in meadows, paſtures, or woods; *Anemonoſpermi* in North and South America and in Aſia; *Omalocarpi* in mountainous ſituations. There are two ſpecies from the Cape of Good Hope, four from South America, eleven from North America, ſeventeen are natives of Europe, three of the Levant, five of Siberia, two of Nepaul, and one of Japan. Four appear to be common to North America and Europe.

Anemone is a very natural genus, and De Candolle declares his opinion againſt ſubdividing it; firſt, becauſe the ſection *Preonanthus* has the habit and flower of the *Anemonantheæ*, with the feathery-tailed fruit of *Pulſatilla*; ſecondly, becauſe the fruit being furniſhed with ſuch an appendage, or deſtitute of it, is not to be conſidered eſſential in the preſent caſe, the ſame circumſtance proving of no avail in the genus *Clematis*, ſo nearly related to the preſent.

The following diviſions, founded on the whole habit as well as the fruit, prove extremely natural.

Sect. 1. *Pulſatilla.* Seeds terminating in long, bearded tails. Involucral leaves ſeſſile, deeply palmate, with linear lobes. Species 1—7.

2. *Preonanthus.* Seeds terminating in long bearded tails. Involucral leaves ſtalked, in three ſegments. Species 8.

3. *Pulſatilloides.* Seeds very hairy. Petals fifteen to twenty. Involucral leaves two or three, ſeſſile, cut at the ſummit. Species 9 and 10.

4. *Anemonanthea.* Seeds without tails, ovate. Partial flower-ſtalks ſolitary or in pairs, always leafleſs and ſingle-flowered. Involucral leaves ſtalked. Species 11—32.

5. *Anemonoſpermos.* Seeds without tails, rather compreſſed. Partial flower-ſtalks ſeveral; one of them leafleſs and ſingle-flowered; two or three others bearing a two-leaved partial involucrum. Species 33—40.

6. *Omalocarpus.* Seeds compreſſed flat, orbicular, or ſlightly oval, ſmooth, without tails. Partial flower-ſtalks numerous, umbellate, leafleſs, ſingle-flowered. Species 41—43.

† Species

† Species not sufficiently known; 44 and 45.

We have corrected some accidental numerical errors, and we take the liberty of using the Linnæan terminology, as to *calyx* or *corolla*, here as in *Aconitum*, &c. *Carpella*, a word used by our learned friend for partial fruits, several of which belong to one flower, as in *Uvaria*, *Unona*, &c., seems to us well expressed, in English at least, by the plural, *fruits*; the singular, *fruit*, being always used when the pericarp is simple, or solitary. *Cariopsis* is used by Richard and De Candolle for the naked seed of Grasses, as well as of *Ranunculaceæ*, of which we do not see the utility. A multiplication of terms, without absolute necessity, is burthensome to science, and we rather wish the learned would labour to compress, instead of extending, the terminology of natural history.

Sect. 1. *Pulsatilla*. Bauh. Pin. 177. Tourn. t. 148.

Seeds terminating in long bearded tails. Involucral leaves sessile, dilated at the base, divided upwards, in a palmate manner, into linear segments. Petals five or six. Glands, (abortive stamens,) in several species, on short stalks, between the perfect stamens and petals. The radical leaves are mostly divided in a pinnate manner, their segments many-cleft, with linear or wedge-shaped lobes. *Flowers* in general purple or crimson.

1. A. *vernalis*. Parsley-leaved Spring Anemone. Linn. Sp. Pl. 759. Fl. Lapp. ed. 2. 189. De Cand. n. 1. Willd. n. 4. Ait. n. 3. Fl. Dan. t. 29. (A. n. 1147; Hall. Hist. v. 2. 61. t. 21. Pulsatilla altera alpina; Dalech. Hist. 851. P. apii folio vernalis, fl. majore, et fl. minore; Bauh. Pin. 177. Prodr. 94. "Helw. Pulf. 63. t. 9.")—Leaves pinnate; leaflets elliptic-wedgeshaped, notched or three-cleft, nearly smooth. Flower erect. Involucrum very hairy. Petals six, straight, elliptic-oblong.—Native of rocky pastures on the loftiest mountains of Switzerland, the Pyrenees, Germany, Sweden, and Norway, flowering among the melting snow in spring. The broad *leaflets*, with the beautifully silky *involucrum* and *petals*, distinguish this species. The *flower-stalk* is three or four inches high, hairy, much elongated above the *involucrum* after flowering, as in all the *Pulsatilla* tribe. *Flower* white, variegated with purple, extremely elegant; we have some doubt whether the report of its being ever yellow be well founded, and whether the term "golden" in Dalechamp, copied by J. Bauhin, may not apply to the brilliant yellow pubescence of the living as well as dried *flowers*, noticed by Haller.

2. A. *Halleri*. Silvery Swiss Anemone. Allion. Pedem. v. 2. 170. t. 80. f. 2. De Cand. n. 2. Willd. n. 5. Villars Dauph. v. 3. 725. (A. n. 1148; Hall. Hist. v. 2. 62.)—Leaves pinnate, deeply cut, with linear-lanceolate, pointed segments; very hairy beneath. Flower erect. Petals six, straight, elliptic-lanceolate.—Native of the alps, flowering in summer. Haller gathered it in the valley of St. Nicholas, in the Upper Vallais; Villars in Dauphiny; Molineri on the Piedmontese mountains; De Candolle in the eastern Pyrenees. The *leaflets* and their segments are much longer and narrower than in the foregoing; pubescence of the *flower* and *involucrum* silvery, not yellow. *Petals* dull purple, converging, not spreading.

3. A. *cernua*. Drooping Japanese Anemone. Thunb. Jap. 238. De Cand. n. 3. Willd. n. 3.—"Leaves pinnate; shaggy and somewhat downy beneath; leaflets pinnatifid, with notched oblong segments. Flower rather drooping. Petals six, elliptic-oblong, spreading."—Native of Japan, about Jedo and Nagasaki, (*Thunberg*,) flowering in spring. All the *stalks* are very hairy, as are the *leaves* beneath, especially when young. The segments of the latter are intermediate between *vernalis* and *Pulsatilla*. *Stalk* six inches high. *Flower* dark purple, hairy externally, smaller than in *A. Pulsatilla*. *De Candolle*.

4. A. *patens*. Naked-flowering Anemone. Linn. Sp. Pl. 759. De Cand. n. 4. Willd. n. 2. Ait. n. 2. (Pulsatilla polyanthos violacea, anemones folio; Breyn. Cent. t. 61. "Helw. Pulf. 52. t. 2, 3.")—Leaves later than the flower; leaflets ternate, wedge-shaped, deeply and acutely pinnatifid and cut. Flower erect, spreading.—Native of Siberia, Poland, Silesia, &c.; recently found by Mr. Schleicher in Switzerland. The *flowers* are as large as any of this section, and more spreading, either pale yellow, white, or purplish, on a very short partial stalk; the *involucrum* in very narrow, linear, hairy segments. The *leaves* expand after the flower is past, and are ternate, not pinnate, with radiating, very acute, variously notched, segments. The *partial stalk* is greatly elongated, from six to nine inches, as the *fruit* ripens. *De Cand.*

5. A. *Pulsatilla*. Pasque-flower Anemone. Linn. Sp. Pl. 759. De Cand. n. 5. Willd. n. 6. Fl. Brit. n. 1. Engl. Bot. t. 51. Fl. Dan. t. 153. Bull. Fr. t. 49. Ehrh. Pl. Off. n. 135. (Pulsatilla; Matth. Valgr. v. 1. 568. Dalech. Hist. 849. P. vulgaris; Lob. Ic. 281. Ger. Em. 385.)—Leaves doubly pinnate, cut, with linear segments. Flower somewhat drooping. Petals six, rather spreading, straight.—Found in wild open fields, and on dry hills, especially where the soil is chalky, throughout most parts of Europe, flowering in April or May. The finely divided, doubly or triply pinnate, *leaves*, whose segments are sometimes nearly awl-shaped, distinguish this from all the preceding. Its *flower*, usually of a dull purplish blue, is said to be occasionally red, greenish, or white, none of which variations have we noticed in England. The *petals* are an inch and a half long, finely downy at the back. Head of *seeds* large and hairy, raised on a tall stalk.

6. A. *pratensis*. Dark Meadow Anemone. Linn. Sp. Pl. 760. De Cand. n. 6. Willd. n. 7. Ait. n. 5. Fl. Dan. t. 611. Woodv. Med. Bot. t. 148. (Herba venti; Trag. Hist. 413. Pulsatilla; Camer. Epit. 392. P. flore clauso; Lob. Ic. 283. P. flore minore; Ger. Em. 386. P. altera; Dalech. Hist. 850.)—Leaves doubly or triply pinnate, with lanceolate, elongated segments. Flower pendulous. Petals six, erect; reflexed at the summit.—Native of meadows, as well as of dry open fields, in Sweden, Denmark, Russia, Germany, France, and, according to the abbé Sestini, near Constantinople with the preceding. This species is distinguished from *A. Pulsatilla*, by the larger coarser segments of its *leaves*, and smaller, darker-coloured *flower*, whose *petals* are recurved at the top. Dr. Storck recommended an extract or infusion of the herb, in chronic diseases of the eyes, and even confirmed lues. Hence it has attracted the notice of physicians, who have been commendably anxious to procure the true plant, which is not found wild in Britain. Probably its virtues, whatever they may be, exist likewise in the *A. Pulsatilla*. Both are easily cultivated.

7. A. *albana*. Pale Caucasian Anemone. "Steven Mem. Soc. Nat. Mosc. v. 3." De Cand. n. 6.* addend. 545.—Leaves doubly pinnate, with numerous oblong-linear segments. Flower drooping. Partial stalk scarcely longer than the involucrum. Petals six, erect, slightly reflexed at the summit.—Gathered by Mr. Steven, on the lofty mountains of the eastern part of Caucasus. Allied to *A. pratensis*, but differing first in the lobes of the *leaves*, and their subdivisions being shorter as well as more obtuse, rather oblong than truly linear: secondly, in the *partial stalk*, even throughout the whole duration of the flower, rising scarcely above the

the *involucrum*, instead of being four times longer: thirdly, in the *flower* being whitish, or sulphur-coloured, not purple: fourthly, in the total want of *glands*, or abortive *stamens*, at least in the specimen seen by professor De Candolle; which are very abundant in the preceding species.

8. A. *Nuttalliana*. Louisiana Anemone. De Cand. n. 7. —Leaves ternate, palmate, many-cleft; segments linear, elongated. Involucrum in numerous linear divisions. Flower erect. Petals six, straight, converging.—Gathered in Louisiana, by Mr. Nuttall. The habit resembles *A. Pulsatilla*, but the *leaves* are ternate, not pinnate. *Footstalks* three inches long, covered with close hairs. *Flower-stalk* from six to twelve inches high; sometimes smooth. *Involucrum* very hairy at the base. *Partial stalk* various in length. *Flower* purplish. *Petals* acute, externally hairy, eight or ten lines long. *Fruit* like *Pulsatilla*. *De Cand.*

Sect. 2. *Preonanthus*. Ehrh. Phytoph. 95.

Seeds terminating in long bearded tails. Involucral leaves ternate, stalked, pinnate, with deeply serrated, notched lobes. Petals five or six. No glands, or abortive stamens. Radical leaves ternate; their divisions pinnate, doubly compound, cut and serrated. Flowers white or yellowish.

9. A. *alpina*. Alpine Anemone. Linn. Sp. Pl. 760. De Cand. n. 8. Willd. n. 8, β. Ait. n. 6. Ehrh. Phytoph. 95. Crantz Austr. fasc. 2. 105. t. 3. f. 2. Villars Dauph. v. 3. 726. (A. n. 1149; Hall. Hist. v. 2. 62. A. alpina alba major; Bauh. Pin. 176. Prodr. 94. Pulsatilla prima alpina; Dalech. Hist. 850.)

β. Flower white, as in α, but much smaller. (A. alpina; Jacq. Austr. t. 85. Willd. n. 8, α. A. sylvestris altera; Clus. Hist. v. 1. 245. Pulsatilla alba; Lob. Ic. 282. Dalech. Hist. 849. P. flore albo; Ger. Em. 386.)

γ. Fl. large, yellow. (A. apii folia; Jacq. Misc. v. 2. 47. t. 4. Willd. n. 9. A. sulphurea; Linn. Mant. 78. A. myrrhidifolia β; Villars Dauph. v. 3. 727, from the author. A. n. 1149, β; Hall. Hist. v. 2. 63. Pulsatilla lutea; Camer. Epit. 393. P. tertia; Dalech. Hist. 851, bad.)

Leaves ternate, pinnate, with pinnatifid, decurrent, serrated lobes. Involucral ones similar. Petals six, spreading. —Native of pastures and rocky declivities in most alpine parts of the middle of Europe, Switzerland, the Pyrenees, the south of France, Austria, Carinthia, &c.; flowering in summer. The conformity of structure between the *involucrum* and the radical *foliage*, clearly ascertains this species. We readily concur with Haller and De Candolle, that the difference of colour between the yellow, lemon-coloured, or white *flowers*, or of size between the large-white and the small, indicate mere varieties. But we scarcely see any reason to mark the more or less hairy *leaves* as permanent varieties; the former being caused by more dry and exposed stations of the same plant. The *petals* are always more or less pale, purplish, and hairy, at the back. The flowering plant is from two to twelve inches high. When in seed its dimensions are every way doubled. A singular monstrosity of variety β, sent us by the late Mr. Davall, has one of its *petals* slipped down, if we may so express it, into the *involucrum*, and greatly enlarged. This, as M. De Candolle justly observes, proves an analogy between the *petals*, (his *calyx*,) and the *involucrum*; but it will not prove them to have more affinity than the *petals* and actual *leaves* of a Tulip, which we have several times seen running into each other, or half and half of the perfect nature of each.

Sect. 3. *Pulsatilloides*. De Candolle.

Seeds very hairy. Petals from seven to twenty, oblong. Involucrum of two or three leaves, somewhat sheathing at their base; cut and toothed upwards. Leaves twice ternate, cut.

10. A. *capensis*. Broad-leaved Cape Anemone. Lamarck Dict. v. 1. 164. De Cand. n. 9. (Atragene capensis; Linn. Sp. Pl. 764. Willd. Sp. Pl. v. 2. 1286. Ait. Hort. Kew. v. 3. 342. Andr. Repos. t. 9. Curt. Mag. t. 716. Pulsatilla foliis trifidis, dentatis, flore incarnata, pleno; Burm. Afric. 148. t. 52.)—Leaves twice-ternate, rigid, smooth; segments wedge-shaped, sharply toothed.—Native of stony acclivities of mountains, at the Cape of Good Hope, flowering from October to March. It is said to have been first cultivated in England, by Messrs. Lee and Kennedy, in 1795. This plant is somewhat caulescent, but the *leaves* are crowded about the lower part, almost close to the woody root. Their texture is extremely firm; their segments varying greatly in size, breadth, and shape; the young ones villous. *Flowers* one or two from each *involucrum*, which resembles the leaves, but is smaller, with a dilated inflated stalk. The partial *flower-stalks* are long and downy. *Petals* thirteen to eighteen, linear-oblong, above an inch in length, pink, or pale blush-coloured, spreading, very handsome. *Germens* extremely hairy, ovate, each with a recurved style.

11. A. *tenuifolia*. Fine-leaved Cape Anemone. De Cand. n. 10. (Atragene tenuifolia; Linn. Suppl. 270. Willd. Sp. Pl. v. 2. 1286. Thunb. Prodr. 94. A. tenuis; Thunb. Jap. 239, note.) — Leaves thrice-ternate, rigid, smooth; leaflets pinnatifid, with linear-threadshaped, acute, entire lobes.—Found by Thunberg at the Cape of Good Hope. The *leaves* are more compound, and more finely divided than those of the preceding species; the plant is described as more caulescent, and the *flowers* but half as large, with only from seven to nine *petals*. We have seen no authentic specimens, but are not without a suspicion that Linnæus confounded this with the last.

Sect. 4. *Anemonanthea*. De Cand.

Seeds nearly ovate, hooked with the permanent style, either very hairy or shaggy, or in some instances nearly smooth. Partial flower-stalks solitary in each involucrum, or very rarely two together, always single-flowered and naked. Petals from five to fifteen.

**Involucral leaves sessile. Root-stock tuberous, somewhat ovate.*

12. A. *coronaria*. Poppy Garden Anemone. Linn. Sp. Pl. 760. De Cand. n. 11. Willd. n. 10. Ait. n. 7. Curt. Mag. t. 841. Sm. Fl. Græc. Sibth. t. 514, unpubl. Lamarck f. 1. (Anemone; Camer. Epit. 386. A. hortensis tenuifolia, simplici flore, n. 2—20; Clus. Hist. v. 1. 255—260; also pleno flore; ibid. 263. A. tuberosa radice, et coccinea multiplex; Lob. Ic. 277. Ger. Em. 374; see also several in his subsequent pages.)—Leaves twice ternate, pinnatifid; segments linear-wedgeshaped, smooth-edged, sharply cut. Involucrum sessile, many-cleft. Petals six, oval, concave, converging.—Native of dry, as well as rather moist, pastures, in the south of France, Italy, and the Levant, flowering in the early spring. Very common on dry hillocks in Greece, according to Dr. Sibthorp, who concurred with former botanists in thinking it the ανεμωνη ἡμερα of Dioscorides; and the learned Sprengel takes the ανεμωνη of Hippocrates to be the same plant. This species, however, bears the same name in modern Greek, παπαρῦνα, as the Field Poppy, *Papaver Rhœas*; nor is the history of these two flowers, however different, free from ambiguity. *A. coronaria* has been the delight of florists ever since the time of Gerarde, and its numerous double varieties, displaying every beauty and splendour of colour, are among the most rare and admired decorations of a parterre. We confess

confess a predilection for the single kinds, equally beautiful and various in colour, which may be raised abundantly from seed in any airy and sunny spot, and require but little trouble in transplantation every fourth or fifth year. They flower most in the winter or spring. The *leaves* vary in breadth. The natural colour of the *flower*, which is cup-shaped, and full two inches broad, is a light purplish-blue, as represented in Dr. Sibthorp's drawing, and as we have gathered it in the groves and grassplats of the Roman villas. The *seeds* are covered with long, soft, tenacious down, concerning the effect of which an amusing story is told by Tournefort and Miller. A lawyer in the south of France stole these seeds from a covetous *amateur*, by ordering his page to drop, as if by accident, the silk train of his robe, when they passed over the bed of seeding Anemonies, and thus obtained a plentiful supply.

13. A. *pusilla*. Dwarf Anemone. De Cand. n. 12.—Leaves thrice ternate, pinnatifid, many-cleft, with linear pointed segments. Involucrum sessile; cut at the summit. Petals six, oblong, distant.—Gathered in Cyprus by Labillardiere. Nearly akin to the last, and perhaps a variety. *Root* tuberous, the size of a filberd. *Leaves* smooth, stalked, with narrow linear segments. *Flower-stalk* a finger's length, slender, downy, erect. *Involucrum* of three leaves, acutely cut and toothed at the apex. *Partial stalk* either the length of the involucrum, or twice or thrice as long. *Flower* erect, pale purple. *Petals* six, rarely but four or five, oblong, bluntish, distant and spreading, about four times the length of the *stamens*. *Seeds* woolly, collected into an oval-oblong head. *De Cand.*

14. A. *pavonina*. Peacock Garden Anemone. Lamarck Dict. v. 1. 166. De Cand. n. 13. "Fl. Franc. v. 5. 634." Brot. Lusit. v. 2. 363, not 263. (A. hortensis latifolia, pleno flore, et flore coccineo; Clus. Hist. v. 1. 261, 262, with three figures. A. maxima chalcedonica polyanthos; Ger. Em. 375. Lob. Ic. 278. A. stellata, geranii aut aconiti folio, duplicato flore purpureo; Cupan. Panph. v. 1. t. 121. ed. 2. t. 22.)—Leaves ternate or deeply three-lobed; leaflets or segments wedge-shaped, cut and toothed. Involucrum sessile, its leaves oblong, entire or slightly cut. Petals ten or twelve, lanceolate, very acute.—Found in vineyards in Navarre, also in the south of France, and probably in the Levant. *De Candolle.* Differs from *A. coronaria* in its less divided *leaves*, and especially those of the *involucrum*, which are five or six, elliptic-lanceolate, rough-edged, most of them quite entire, one or two only partially notched. The narrow and acute *petals* are also peculiar. We feel convinced with Lamarck and De Candolle that this must be a distinct species, though confounded by Linnæus and others with the more frequent *A. coronaria*. We have not sought out its varieties among the double Anemonies, but there is a scarlet one not uncommon. The French know some of these varieties by the names of *Oeil de paon*, *Candiote*, &c. If this be not distinct, it should seem to belong to the following rather than to any other.

15. A. *hortensis*. Starry Garden Anemone. Linn. Sp. Pl. 761. Willd. n. 11. Ait. n. 8. Curt. Mag. t. 123. Sm. Fl. Græc. Sibth. t. 515, unpubl. (A. hortensis latifolia simplici flore, n. 3—18; Clus. Hist. v. 1. 249—254. A. prima; Dod. Pempt. 434. A. secunda; Camer. Epit. 387. A. tuberosa, bulbocastani radice; Lob. Ic. 279. Ger. Em. 375. f. 5. A. n. 1152; Hall. Hist. v. 2. 64. A. stellata; Lamarck Dict. v. 1. 166. Brot. Lusit. v. 2. 363. Savi Etrusc. v. 2. 122. De Cand. n. 14. "Fl. Franc. v. 5. 634.")—Leaves ternate; leaflets wedge-shaped, rough-edge, three-cleft, cut. Involucrum sessile; its leaves lanceolate, undivided or partly cut. Petals ten or twelve, elliptic-lanceolate, obtuse.—Found on banks, ruins, or bushy waste ground, in the south of Europe; very commonly in Italy and Greece, flowering in the early spring; less abundantly in the south of France, and Switzerland. Clusius observed this species near Mentz. It has been known in gardens as long as the *coronaria*, but being inferior in beauty and variety, has given place to that popular species. We cannot follow Lamarck in its specific appellation, because there is no end of changing names for the better; unless all leading botanists would concur in a general reform; and even in that case, positively erroneous names only should be altered. This pretty species has an oblong tuberous *root*, producing many *leaves* and *stems*. The latter are ternate, on long stalks; their *leaflets* coriaceous, strongly veined, either cut half way down into three broad lobes, or divided nearly to the base, into three subdivided narrow ones; their segments all acute; their edges remarkably rough, though both surfaces are usually, if not always, smooth and naked. *Involucral leaves* three, an inch long, silky, rough-edged; one of them in general slightly notched at the end. *Partial stalk* long, silky, especially near the top. *Flower* scarcely above an inch wide, of a delicate rose-colour, or full carnation; the *petals* silky at the back, veiny, often emarginate. The rough-edged *leaves* and *involucrum* are characteristic of this species, but the *involucrum* of *pavonina*, (we have not examined its *leaves*,) has the same character, which *coronaria* has not. We are strongly persuaded of *pavonina* being a variety of *hortensis*, and that the acuteness or bluntness of the *petals* is variable.

16. A. *palmata*. Cyclamen-leaved Anemone. Linn. Sp. Pl. 758. De Cand. n. 15. Willd. n. 12. Ait. n. 9. Andr. Repos. t. 172. Vahl Symb. v. 3. 73. Desfont. Atlant. v. 1. 432. (A. hortensis latifolia, simplici flavo flore; Clus. Hist. v. 1. 248. Moris. sect. 4. t. 25. f. 3. A. latifolia Clusii; Lob. Ic. 279. Ger. Em. 376. A. latifolia flava; Barrel. Ic. t. 792.)—Leaves simple, heart-shaped, rounded, with three or five blunt, sharply-toothed lobes. Involucrum sessile; its leaves in three linear, acute, hairy lobes. Petals ten or twelve, oblong, obtuse.—Native of rather moist waste ground, in Portugal, Spain, the south of France, and the north of Barbary, flowering early in spring. Rarely cultivated with us, except in curious gardens, though the brilliant golden *flowers* are very handsome. The *leaves*, notwithstanding Mr. Andrews's doubts, are truly palmate, differing from the last in being simple, and, though more or less hairy, not rough at the edges as in that species. They are coriaceous, strongly veined; often purple beneath. The *involucral* ones are three, almost uniform, hairy or silky, an inch long, narrow, each divided about half way into three nearly equal, sometimes notched, linear lobes; the edges apparently fringed, but not rough. *Stalk* above the *involucrum* rather long, silky. *Flowers* an inch and a half or two inches broad. *Petals* linear-obovate; the six outer ones remarkably hairy externally, and so disposed in Linnæus's only specimen, that he took them for the same kind of close *calyx* as occurs in *Hepatica*, only with a double number of segments. Thus he was led to place *A. palmata* in his first section, *Hepaticæ*, and this will solve Vahl's difficulty, recorded in his *Symbolæ* above cited. But it will not account for this author's extraordinary quotation of Linnæus's words, which are "*calyx sexpartitus, integerrimus, villosus, coloratus, nec a flore remotus.* Vahl cites this passage, "*calyx hexaphyllus, coloratus, a flore remotus.*" The supposed double variety of the present species,

cies, Cluf. Hift. v. 1. 249. f. 1, and Ger. Em. 376. f. 7, which De Candolle marks with doubt, and has never feen, is reprefented with the many-knobbed *root* of a *Ranunculus*, to which genus we fhould not be furprifed if it proved to belong.

17. A. *decapetala*. Little Three-leaved Anemone. Arduin. Spec. 2. 27. t. 12. Linn. Mant. 79. De Cand. n. 16. Willd. n. 17. Lamarck Dict. v. 1. 167. (" A. trilobata; Juff. Ann. du Muf. v. 3. 247. t. 21. f. 3.")—Leaves ternate; leaflets rounded, unequally three-lobed and toothed. Involucral leaves feffile, twice three-cleft, with linear fegments. Petals ten or twelve, elliptic-lanceolate, obtufe.—Sent by Father Panegai to profeffor Arduino, from Brafil, where Commerfon alfo met with this curious little plant; as did Dombey and Née in Peru and Chili. The root is ovate and tuberous, about the fize of a filberd. *Leaves* fmaller than the laft, and perfectly ternate, obfcurely dotted, befprinkled with fhort hairs, but not rough-edged; their teeth unequal, bluntifh, often callous-pointed. *Stalk* two or three inches high, filky at the top, with an *involucrum* about the middle, totally unlike the leaves, being doubly, but imperfectly, three-cleft, with linear fegments, callous at the tips. *Flower* fcarcely half the fize of *A. hortenfis*, which it refembles in form. The *petals* appear to be white; filky and purplifh at the back.

18. A. *parviflora*. Small-flowered American Anemone. Michaux Boreal.-Amer. v. 1. 319. De Cand. n. 17. (" A. cuneifolia; Juff. Ann. du Muf. v. 3. 248. t. 21. f. 1." Purfh 386.)—Leaves ternate; leaflets wedge-fhaped; abrupt and crenate at the extremity. Involucral leaves feffile, deeply three-cleft, fomewhat notched. Petals fix, oval-oblong.—Native of banks of rivulets at Hudfon's bay, Labrador, and Newfoundland, flowering from March to May. Akin to the two laft. Radical *leaves* fmooth and naked; involucral ones with oblong fegments. *Stalk* very long. *Flowers*, according to Purfh, white, the fize of *A. nemorofa*. *Seeds* woolly, pointed, forming a globular head. *De Candolle.*

19. A. *caroliniana*. Little Carolina Anemone. Walt. Carol. 157. De Cand. n. 18. (A. tenella; Purfh n. 4.)—" Leaves ternate; leaflets deeply three-cleft, cut, fharply toothed. Involucral leaves three-cleft, notched. Petals ten or twelve, linear."—Gathered in Carolina, by the late Mr. Walter; on the banks of the Miffouri, by governor Lewis; flowering in May. *Root* fmall, tuberous. *Herb* tender and delicate. *Leaflets* fome with only toothed, and others with deeply three-cleft, jagged, and fharply toothed, lobes. *Stalk* fingle-flowered. *Involucrum* of three leaves, with jagged fegments. *Partial ftalk* long. *Petals* fmall, purplifh, externally downy. *Seeds* pointed, woolly. The fourth *Ranunculus*, Pluk. Almag. 310, cited doubtingly by De Candolle, who has omitted the word *procerus* in tranfcription, feems to us at beft very uncertain, and particularly fo on account of that very word.

20. A. *triternata*. Fine-leaved Brafil Anemone. Vahl Symb. v. 3. 74. t. 65. De Cand. n. 19. Willd. n. 18. Lamarck f. 3. (" A. fumariæfolia; Juff. Ann. du Muf. v. 3. 247. t. 20. f. 2.")—Leaves thrice ternate; leaflets cut; fegments lanceolate, acute. Involucral leaves in many fetaceous divifions. Petals ten or twelve, oblong, obtufe. Fruit cylindrical.—Gathered by Commerfon at Monte Video. It is faid to have been alfo found in Peru, by Leubaz; flowering in November. The *root* and *flowers* bear a great refemblance to *A. decapetala*; but the *leaves* are totally different, being cut into innumerable, fine, divaricated fegments, quite fmooth, entire at the edges, and not at all toothed or ferrated. The *involucrum* too is fomewhat different, each of its three leaves being firft divided half way down, into three parts, and thofe fubdivided into many flender, tapering fegments. The feeds are numerous, tapering, beaked, very hairy, clofely imbricated in a cylindrical, fomewhat elliptical, head, an inch long.

21. A. *biflora*. Two-flowered Oriental Anemone. De Cand. n. 20.—" Leaves ternate; leaflets deeply divided into linear, obtufe, partly cut, lobes. Involucral leaves feffile, in many deep fegments. Partial flower-ftalks in pairs, one of them with a partial involucrum."—Gathered by Michaux in the Levant. Of this De Candolle defcribes two varieties.

α, with two leaves in the general, and two in the partial, involucrum. *Root* an oblong *tuber*, tapering upwards, fibrous below. *Leaves* fmooth, on long ftalks, ternate; their *leaflets* in deep, linear, fomewhat notched, obtufe, thickifh lobes. *Common flower-ftalk* round, the length of the footftalks, about four inches. *Involucrum* of two feffile leaves, in numerous deep divifions, refembling the radical foliage. *Partial ftalks* two, fingle-flowered, clofely downy; one naked; the other furnifhed, near the bafe, with a two-leaved *partial involucrum*, like the general one. *Flowers* rather drooping, yellow, with five *petals*, which are oval-oblong, obtufe, externally downy, rather larger than in *A. ranunculoides*. *Stamens* few in the flower, with a two-fold *involucrum*; numerous in the other. *Germens*, on the contrary, many in the former, few in the latter.

β, with three leaves in the only involucrum.

Footftalks, as well as *flower-ftalks*, much fhorter. *Flowers* on much longer partial ftalks, white with a tinge of purple. *General involucrum* of three leaves. *Petals* blunter, and rather more villous, than in α. *Seeds* woolly, as in *A. baldenfis*. Poffibly a diftinct fpecies.

** *Involucral leaves ftalked. Root-ftock tuberous, fomewhat ovate.*

22. A. *apennina*. Blue Mountain Anemone. Linn. Sp. Pl. 762. De Cand. n. 21. Willd. n. 24. Fl. Brit. n. 3. Engl. Bot. t. 1062. Prodr. Fl. Græc. Sibth. n. 1250. Curt. Lond. fafc. 6. t. 35. (A. geranifolia; Bauh. Hift. v. 3. 405. Ger. Em. 377. Lob. Ic. 280. A. hortenfis tenuifolia, fimplici flore; Cluf. Hift. v. 1. 254. Ranunculus nemorofus, flore cæruleo, duplex, apennini montis; Mentz. Pugill. t. 8.)—Leaves twice ternate, pinnatifid, fharply notched. Involucral ones ftalked, ternate, pinnatifid and cut. Petals twelve to fourteen, oblong, obtufe.—Native of groves and thickets in fome parts of England, but rare, as near as Wimbleton, Luton-hoe, and Berkhamftead. *Fl. Brit.* In Italy it occupies the place of *A. nemorofa* in the more northern parts of Europe, and is equally plentiful, flowering in March and April. Dr. Sibthorp noticed it in the Morea; Dr. Clarke on the banks of the Simois; and the baron Marfchall von Bieberftein in the Iberian Caucafus. The *root* is fmaller than a filberd, bearing one or two *leaves*, each on a zigzag *footftalk*, very flender at the bafe. The *leaves* much refemble *Geranium robertianum*; thofe of the *involucrum* are fimilar, but lefs divided, with narrower fegments. *Stalk* folitary, from four to nine inches high, filky above the involucrum. *Flower* of a fine blue, with pale *ftamens* and *piftils*, very beautiful, faid to be occafionally white.

23. A. *cærulea*. Small Blue Anemone. De Cand. n. 22.—" Leaves...... Involucral ones on fhort ftalks, triply pinnate, cut and toothed. Petals four or five, oval."—Gathered by Mr. Patrin, near Zmeof in Siberia, flowering in the early fpring. The *root* and radical *leaves* are wanting in the fpecimens feen by De Candolle. This fpecies agrees in defcription with the laft, but the *partial ftalk* is

much

much ſhorter than the *involucrum*, and the ſmall blue *flower* has only four or five roundiſh, very obtuſe *petals*, more like *A. nemoroſa*, except in colour.

*** *Involucral leaves ſtalked. Root-ſtock cylindrical, ſlender, elongated.*

24. A. *baldenſis*. Strawberry-fruited Anemone. Linn. Mant. 78. De Cand. n. 23. Willd. n. 14. Allion. Pedem. v. 2. 172. t. 44. f. 3, and t. 67. f. 2. (A. fragifera; Jacq. Miſc. v. 2. 55. Ic. Rar. t. 103. A. alpina; Scop. Carn. v. 1. 384. t. 26. A. n. 1151; Hall. Hiſt. v. 2. 63.) —Leaves twice-ternate, many-cleft; ſegments linear-wedge-ſhaped, acute. Involucral ones ſimilar, ſtalked, leſs compound. Petals eight to ten, elliptic-oblong. Fruit ovate, woolly.—Native of the alpine precipices of mount Baldus, as well as of Switzerland, Dauphiny, Savoy, Auſtria, the Tyrol, &c., firſt cultivated in England by Mr. Loddige, in 1792. It flowers early in ſummer. The *root* is long and woody. *Leaves* firm and rather glaucous, ſmooth, like rue, but narrower; their *footſtalks* hairy, an inch and a half long. *Flower-ſtalk* hairy, erect, three or four inches high, with a large three-leaved *involucrum* below the middle. *Flower* white, rather larger than *A. apennina*, with fewer and broader *petals*. *Fruit* the ſize and ſhape of a ſmall ſtrawberry, with the reddiſh beaks of its *ſeeds* ſticking out of the copious denſe maſs of tawny ſilky wool. *Receptacle* perfectly cylindrical.

25. A. *nemoroſa*. Common Wood Anemone. Linn. Sp. Pl. 762. De Cand. n. 24. Willd. n. 23. Fl. Brit. n. 2. Engl. Bot. t. 355. Prodr. Fl. Græc. Sibth. n. 1249. Curt. Lond. faſc. 2. t. 38. Fl. Dan. t. 549. Bull. Fr. t. 3. (A. nemorum alba; Ger. Em. 383. Herba ſylveſtris, ignoti nominis; Brunf. Herb. v. 2. 80. Ranunculi quarta ſpecies lactea; Fuchſ. Hiſt. 161. Ranunculus ſylvarum; Cluſ. Hiſt. v. 1. 247, 248. R. candidus; Trag. Hiſt. 95.)

β. Michaux Boreal.-Amer. v. 1. 319. Purſh 386. (A. quinquefolia; Linn. Sp. Pl. 762. Willd. n. 22. Ranunculus nemorum, fragariæ foliis, virginianus; Pluk. Phyt. t. 106. f. 3.)

Leaves ternate; leaflets in three, or five, deep, three-lobed, notched, lanceolate, acute ſegments. Involucral ones ſimilar, ſtalked, leſs compound. Petals ſix, elliptical. —Common in groves and thickets throughout Europe, where *A. apennina* ſcarcely occurs, flowering in ſpring. About the ſize of that ſpecies, with ſome reſemblance of foliage; but there is leſs difference between the *leaflets* of the radical *leaves* and thoſe of the *involucrum*. The *root* alſo is long and ſlender, not ovate. The *flowers* are white, often tinged with purple externally, formed of ſix broad *petals*, totally unlike *apennina*. The double variety is very elegant. That with five deep lobes in each *leaflet*, occurs occaſionally in England as well as North America, and is evidently a moſt trifling variety, though Linnæus, led perhaps by Plukenet's bad figure, made it a ſpecies.

26. A. *iſopyroides*. Wedge-leaved Anemone. "Juſſ. Ann. du Muſ. v. 3. 249. t. 20. f. 3." De Cand. n. 25.— "Leaves twice ternate; leaflets ſomewhat wedge-ſhaped, deeply three-toothed. Involucral leaves ſtalked, ternate; lateral ſegments divided. Petals five, oblong."—Deſcribed by De Candolle, from Juſſieu's herbarium, but the native country of the plant is unknown. It is ſaid to be extremely ſimilar to *A. nemoroſa*. The *root* is horizontal. *Radical leaves* on long ſtalks, whoſe partial ſtalks bear each three nearly wedge-ſhaped, cut, or toothed, *leaflets*. The lateral *leaflets* of each *involucral leaf* being divided, give the appearance of five leaflets in each. *Flowers* one or two to an involucrum. *Petals* oblong, narrow, elongated. *De Cand.*

27. A. *lancifolia*. Lanceolate-leaved Anemone. Purſh n. 2. De Cand. n. 26.—Leaves all ſtalked, ternate; leaflets lanceolate, bluntly toothed. Petals five, ovate, acute. —On high mountains in a boggy ſoil, in Pennſylvania and Virginia, flowering from May to July. Reſembles *A. nemoroſa*, but the *flowers* are larger, of a clear white. *Purſh.* De Candolle ſays the *leaves* ſcarcely differ from *A. trifolia*, by which we are led to ſuſpect that Plukenet's t. 106. f. 3, cited by Linnæus and others for *quinquefolia*, with which it does not well accord, may belong to the ſpecies before us.

28. A. *trifolia*. Three-leaved Anemone. Linn. Sp. Pl. 762. De Cand. n. 27. Willd. n. 21. Ait. n. 16. Dod. Pempt. 436. Ger. Em. 377. Moriſ. ſect. 4. t. 25. f. 1. (A. trifolia, flore albo; Bauh. Hiſt. v. 3. 412. Alabaſtrites, ſive Dentaria alba; Lob. Ic. 281.)—Leaves and involucrum ſtalked, ternate; leaflets of all ovate, acute, ſerrated. Petals five or ſix, elliptical, obtuſe.—Native of rather mountainous groves and thickets, in France, Piedmont, Tuſcany, Carniola, Carinthia, and Siberia, flowering in ſpring. Gerarde appears to have cultivated this ſpecies, but we have never ſeen or heard of it in modern times. The *root* is oblong, horizontal, ſomewhat toothed. *Leaves* two or three inches high, each of three leaflets about an inch long, with hairy ribs and edges. *Stalk* about a ſpan high, or more, angular, ſmooth, bearing an *involucrum* of three uniform ſtalked *leaves*, like the radical ones, but rather larger; the lateral leaflets very unequal at their baſe; the central one tapering into the *footſtalk*. *Partial flower-ſtalk* about the length of the ſtalks of the involucrum, ſolitary, ſimple, ſlender, hairy. *Flower* ſcarcely an inch broad. *Petals* from five to ſeven, white; purpliſh underneath.

29. A. *minima*. Leaſt Anemone. De Cand. n. 28.— "Leaves...... Involucral ones ſtalked, deeply three-cleft; lobes ovate, pointed, ſerrated externally and at the extremity. Petals five, oval-oblong, obtuſe."—Native of the Allegany mountains in Virginia; *Paliſot de Beauvois*. Remarkably tender and delicate, reſembling *A. trifolia*, but only one-third its ſize. *Root* long, ſlender, horizontal, ſending out a few fibres. *Radical leaves* wanting in the ſpecimens. *Stalk* ſlender, round, ſmooth, a finger's length. *Leaflets* of the *involucrum* cloſely downy; the lateral ones ſtrongly ſerrated at their outer margin, and from the middle to the end at both margins. *Partial ſtalk* the length of the involucrum, erect, downy, ſimple. *Flower* ſmall, white. *Petals* ſmooth, four lines long, and two broad. *Stamens* half as long. *Germens* few, downy. *De Cand.*

30. A. *ranunculoides*. Yellow Wood Anemone. Linn. Sp. Pl. 762. De Cand. n. 29. Willd. n. 26. Fl. Brit. n. 4. Engl. Bot. t. 1484. Fl. Dan. t. 140. Savi Etruſc. v. 2. 123. (A. n. 1153; Hall. Hiſt. v. 2. 64. A. nemorum lutea; Ger. Em. 383. Ranunculi quarta ſpecies lutea; Fuchſ. Hiſt. 162. R. tertia ſpecies; Cord. Annot. 120, with Tragus's figure of *A. nemoroſa*, of which the larger part reſembles that ſpecies, the ſmaller this. Ranunculus nemoroſus luteus; Bauh. Pin. 178. Lob. Ic. 674. Moriſ. ſect. 4. t. 28. f. 11.)—Leaves ternate or quinate; leaflets three-lobed, deeply notched; wedge-ſhaped at the baſe. Involucral ones ſimilar, ternate or quinate, ſomewhat ſtalked. Flowers moſtly in pairs. Petals five or ſix, elliptical.—Frequent in groves, thickets, and hilly paſtures, throughout the north and middle of Europe, as well as Siberia and part of Caucaſus, but rare in England. Mr. Hudſon found it in Kent and Hertfordſhire; and the late Mr. Geo. Anderſon brought us ſpecimens from near Abbot's Langley, flowering early in April. The *root* is ſlender, horizontal. *Herbage* not unlike *A. nemoroſa*, but the

the *leaflets* are more elongated and cut, and the ſtalks of the *involucrum* much ſhorter. The *petals* are broader, and of a full yellow. *Flowers* often two together, one of which, according to De Candolle, is ſometimes deficient in *piſtils.* The *partial ſtalk* appears to droop as the fruit ripens. The *germens* are nearly orbicular, compreſſed, downy, the *ſtyle* of each forming a ſtrong incurved beak. There is ſaid to be a violet-coloured variety found on the Pyrenees.

31. A. *reflexa.* Reflexed Anemone. Stephen. in Willd. n. 25. De Cand. n. 30.—" Leaves ternate; leaflets ſomewhat three-cleft, toothed at the extremity. Involucral ones ſimilar, ſtalked. Petals five or ſix, linear, obtuſe, reflexed."—Native of Siberia. *Stalk* ſlightly downy at the top, ſlender, a palm in height. *Involucral leaves* ſmooth, on downy ſtalks; their *leaflets* acute, tapering at each end. *Partial ſtalk* ſolitary, ſhorter than the involucrum while in flower, erect, ſlightly hairy. *Flower* yellow, one-third the ſize of the laſt. *Stamens* very numerous, ſhorter than the *petals. De Candolle, Willd.*

**** *Involucral leaves ſtalked. Root of tufted fibres.*

32. A. *ſylveſtris.* Snow-drop Anemone. Linn. Sp. Pl. 761. De Cand. n. 31. Willd. n. 15. Ait. n. 12. Curt. Mag. t. 54. Bull. Fr. t. 59. (A. ſylveſtris prima; Cluſ. Hiſt. 244. A. tertia; Matth. Valgr. v. 1. 565. Lob. Ic. 280. Camer. Epit. 388. Dalech. Hiſt. 843. A. Matthioli; Ger. Em. 377. A. n. 1150; Hall. Hiſt. v. 2. 63.) — Leaves ternate or quinate; leaflets lobed; deeply notched at the end. Involucral ones ſimilar, ſtalked. Flower ſolitary. Petals ſix, elliptical. Fruit very woolly. Root fibrous. — Found in woods and hedges in various parts of France, Switzerland, the north of Italy, Germany, Siberia, &c. but not in England, though a very deſirable hardy perennial in our gardens, flowering in ſpring, and ſometimes in autumn. The *root* conſiſts of long, black, rather ſtout fibres, and creeps rather extenſively. *Leaves* large, dark-green, veiny, nearly ſmooth, coarſely notched; their leaflets or lobes wedge-ſhaped at the baſe. *Flower-ſtalk* fifteen or eighteen inches high, erect, downy at the top, bearing about the middle three, rarely four, large, ſtalked *involucral leaves*, whoſe *leaflets*, five or more, are ſcarcely diſtinct at the baſe. *Flower* pure white, rarely purpliſh, or greeniſh, externally downy; its *petals* near an inch long, ſlightly coriaceous. *Fruit* ovate, the *ſeeds* cohering for ſome time by their denſe cottony wool, which at length, by ſpreading itſelf, wafts them away. We have one Swiſs ſpecimen with two *partial ſtalks*, one of which bears a partial *involucrum*, as in the next ſection.

33. A. *alba.* Cotton Anemone. " Juſſ. Ann. du Muſ. v. 3. 248. t. 20. f. 1." De Cand. n. 32.—" Leaves ternate or quinate; leaflets deeply toothed at the end. Involucral ones ſimilar, ſtalked. Flower ſolitary. Petals five, obovate. Fruit very woolly. Root fibrous."—Native of Dauria, and the Crimea. Very like the laſt, but rather ſmaller. *Petals* five, not ſix, ſhorter, rounder, and very obtuſe. The *ſeeds* are ſo woolly, that Demidow aſſerts they ſupply the place of cotton. *De Candolle.* We concur in opinion with our author, that this plant is probably a variety, we ſhould ſay a very ſlight one, of the foregoing ſpecies. If diſtinct, the name of *goſſypina* would have been far preferable to *alba.* We would alſo ſuggeſt, that this laſt diviſion of the fourth ſection of the genus, rather belongs to the fifth, which is ſhewn by its habit, and by the caſual variation in the infloreſcence of *A. ſylveſtris* above noticed, of which we have ſeen more examples.

Sect. 5. *Anemonoſpermos* of De Candolle; not of former authors.

Seeds rather compreſſed, villous, hooked with the permanent ſtyle. Petals five, very rarely ten. Umbel ſpuriouſly compoſed, there being ſeveral ſtalks in one involucrum; one of them naked and ſingle-flowered; two or three others bearing each a two-leaved partial involucrum, from whence ſprings a ſingle-flowered ſtalk.

34. A. *virginiana.* Virginian Anemone. Linn. Sp. Pl. 761. De Cand. n. 33. Willd. n. 16. Ait. n. 13. Purſh n. 10. (A. virginiana, tertiæ Matthioli ſimilis, parvo flore; Herm. Parad. 18, with a plate.) — Leaves ternate, downy; leaflets three-cleft, pointed, notched, ſharply ſerrated. General and partial involucrum ſimilar, ſtalked. Petals five, elliptical.—In woods, on the ſides of dry ſandy hills, from Canada to Carolina, flowering in May and June. *Flowers* ſmall, greeniſh-yellow. *Purſh.* The *leaflets* and their ſegments are much more pointed, and more ſharply and copiouſly ſerrated, than in *A. ſylveſtris.* Whole *herb* downy, ſoft to the touch. *Seeds* very woolly, in an oval head, on a cylindrical *receptacle.*

35. A. *multifida.* Magellanic Anemone. " Poiret in Lamarck Suppl. v. 1. 364." De Cand. n. 34.—Radical leaves ternate; leaflets in many deep linear ſegments. General and partial involucrum ſimilar, many-cleft, ſomewhat ſtalked. Petals five to ten, elliptical, obtuſe.—Gathered by Commerſon at the ſtraits of Magellan. The *root* is woody. Radical *leaves* on long, looſely hairy, ſtalks. *Common flower-ſtalk* ſtout, erect, taller than the leaves, about ſix inches high. *General involucrum* of three leaves, about two inches long, including their broad hairy ſtalks, being rather larger than the radical leaves, but all ſimilarly divided into linear, or narrow-wedgeſhaped, partly three-cleft, looſely hairy, lobes. *Partial flower-ſtalks* three; the middle one earlieſt, four or five inches long, hairy, leafleſs; the others much ſhorter, ſpreading, each bearing two ſmaller, but otherwiſe ſimilar, involucral leaves; all ſingle-flowered. *Flowers* about the ſize of *A. apennina*, pale yellow, or buff-coloured, according to Commerſon; externally hairy. *Seeds* hairy, collected into a globular head.

M. De Candolle ſaw, in the Bankſian herbarium, a plant from Hudſon's bay, which he conſidered as a variety, differing from the Magellanic ſpecimens in having only one *flower*; or, at moſt, two, one of which bore a partial *involucrum* below the middle. He ſuggeſts that it may poſſibly conſtitute a diſtinct ſpecies.

36. A. *pennſylvanica.* Pennſylvanian Anemone. Linn. Mant. 247. De Cand. n. 35. Willd. n. 19. Ait. n. 14. Purſh n. 8. (A. irregularis; Lamarck Dict. v. 1. 167. *De Cand.* A. aconitifolia; Michaux Boreal.-Amer. v. 1. 320.)—Leaves deeply three-cleft; ſegments three-lobed, notched, acute. Involucral ones ſimilar, ſeſſile. Petals five, elliptical. Seeds villous.—In meadows, and on the borders of woods, from Canada to Pennſylvania, flowering in June and July. *Flowers* large, white, with yellow *anthers. Purſh.* Sir Joſeph Banks has ſpecimens from Fort Albany and Hudſon's bay. *De Cand.* We have one from the late Peter Collinſon's garden at Mill-hill, probably of an earlier date than 1766; ſee Hort. Kew. This is a tall, apparently cauleſcent, ſpecies, whoſe *flower-ſtalk* is angular, a foot and a half or two feet high, twice forked, and variouſly compound. The radical *leaves* we have not ſeen; De Candolle deſcribes them with long *footſtalks*, as tall as the flowering ſtalk, and deeply divided into three or five principal lobes, which are oblong-lanceolate; wedge-ſhaped at the baſe; pointed, cut and toothed, at the extremity. Such, nearly, are the general, as well as partial, *involucral leaves*, but ſeſſile, the former three, the latter two, at each diviſion of the ſtalk; all ſtrongly ribbed, two or three inches long, ſlightly downy with ſmall, cloſe, ſcattered hairs.

 Partial

Partial ſtalks long, ſtraight and ſlender, ſingle-flowered, rarely ſomewhat leafy. *Petals* three-quarters of an inch long, obtuſe. *Seeds* compreſſed, pointed, ſparingly downy. A variety, or perhaps a diſtinct ſpecies, found by Laxmann in Siberia, is mentioned by De Candolle, which approaches *A. narciſſiflora* in the firſt appearance of its *inflorescence*, but is really more akin to *pennſylvanica*, differing, as it ſeems, chiefly in the ſituation of each ſmall *partial involucrum*, near the bottom of their reſpective ſtalks. We have not ſeen any ſpecimen.

37. A. *dichotoma*. Forked Anemone. Linn. Sp. Pl. 762. De Cand. n. 36. Willd. n. 20. Ait. n. 15. Purſh n. 9, excluding the ſyn. of Lamarck. Linn. Fl. Dec. 2. 29. t. 15. (A. n. 37; Gmel. Sib. v. 4. 197, excluding the ſynonyms. Ranunculus Braſilianus; Linn. Am. Acad. v. 1. 155. n. 102.)—Leaves deeply three-cleft; ſegments oblong, cut and toothed at the end. Involucral ones ſimilar, ſeſſile, all two-leaved. Petals five, elliptical. Seeds ſmooth.—Frequent throughout Siberia. *Gmelin*. In wet woods, and natural meadows, of Canada, and the weſtern parts of New York, flowering in May and June. *Purſh*. *Root* ſlender. *Herb* ſmaller than the preceding, and ſmoother, with only two leaves to the *general involucrum*, and the *leaflets* or ſegments have larger, but much fewer, teeth or ſerratures. The *flower* moreover is ſmaller, tinged with red on the outſide; and the *ſeeds* are ſmooth.

38. A. *mexicana*. Mexican Anemone. "Humb. Bonpl. et Kunth, MSS." De Cand. n. 37.—"Leaves three-cleft; ſegments oval, ſomewhat wedge-ſhaped, deeply toothed. Involucral ones in pairs, ſeſſile, cut. Germens downy."—Native of Mexico, near Santa Roſa. *Herb* rather hairy all over. Segments of the *leaves* ſcarcely pointed; the lateral ones often divided. *General involucrum* of only two leaves, its central *flower-ſtalk* naked; the lateral *ſtalks*, from one to three, bearing a ſmall two-leaved *partial involucrum* near the bottom. *Flowers* white, much like *pennſylvanica*. *Germens* downy, oblong, taper-pointed. *De Cand.*

39. A. *helleborifolia*. Hellebore-leaved Anemone. De Cand. n. 38.—"Leaves pedate; leaflets ſmooth, rather coriaceous, three-cleft; wedge-ſhaped at the baſe, and ſomewhat ſtalked; lobes ſerrated, acute. Involucral ones all three-leaved, nearly ſeſſile. Germens ſmooth."—Gathered by Dombey, near Huaſa-Huaſi, in South America. A handſome very diſtinct ſpecies. *Root* round, rather thick, with numerous fibres. *Radical leaves* numerous, on hairy ſtalks three or four inches long. *Flower-ſtalk* round, hollow, twelve or eighteen inches high; its firſt branches three or four, long and ſmooth; ſecondary ones rather hairy, moſtly three-flowered. *Involucral leaflets* rather ſhaggy at their baſe, three-cleft; their lobes three-cleft, ſerrated, acute. *Flowers* white. *Petals* five, oval. *Stamens* ſhort. *Seeds* fifteen to twenty, oval, ſmooth, each with a hooked ſtyle, crowded upon a hairy *receptacle*. Sometimes a third *partial involucrum* is found under the flower. *De Cand.*

40. A. *vitifolia*. Vine-leaved Anemone. Buch. MSS. De Cand. n. 39.—Leaves palmate, acutely ſeven-lobed, ſerrated; downy and hoary beneath. Involucral ones ſimilar, three or five-lobed, ſtalked, heart-ſhaped, two or three together. Petals five, obovate. Germens ſmooth.—Gathered by Dr. Francis Buchanan, near Sembu (not Lamba), and Narainhetty, in Nepaul, flowering in Auguſt and September. The *radical leaves*, in his own ſpecimens, are from ſix to ten inches wide, ſmooth above, ſtrongly and copiouſly veined, cut more than half way down, into three principal, pointed lobes, with two or three more ſhallow, rounded, and imperfect ones at each ſide. *Footſtalks* a foot long, angular, hairy. *Involucral leaves* much ſmaller, and leſs lobed; their *ſtalks* of various proportions; three at the firſt ſubdiviſion of the tall downy *flower-ſtalk;* two at the upper ones. *Flowers* the ſize of *A. ſylveſtris*, white; externally ſilky, reddiſh, and ſtrongly ribbed. *Seeds* numerous, covering a globular *receptacle*, interſperſed with long, white, woolly down. This ſpecies is remarkable for the great ſize, and white downy backs, of its *leaves*, ſome of which rival thoſe of *Rubus odoratus* in dimenſions.

41. A. *rivularis*. Water Anemone. Buch. MSS. De Cand. n. 40.—Leaves ternate, hairy on both ſides; leaflets wedge-ſhaped, three-cleft, notched, and ſharply toothed; involucral ones ſeſſile, deeply three-lobed, pinnatifid, cut. Petals five, ovate.—Native of the moiſt banks of rivulets in Upper Nepaul; gathered by Dr. Buchanan, near Chitlong, April 12, 1802. *Root* rather woody, as thick as the thumb. *Radical leaves* numerous, three inches broad, on hairy ſtalks from four to eight inches long. *General involucral ones* three, larger, more elongated and pinnatifid; *partial* two, with ſtill narrower lobes. *Flowers* half the ſize of the laſt, white; purpliſh and hairy beneath.

Sect. 6. *Omalocarpus*. De Candolle.

Seeds compreſſed flat, oval-orbicular, very ſmooth, perfectly deſtitute of point or tail. Flower-ſtalks numerous, ſingle-flowered, naked, forming an umbel in the involucrum; rarely ſolitary.

42. A. *narciſſiflora*. Narciſſus-flowered Anemone. Linn. Sp. Pl. 763. De Cand. n. 41. Willd. n. 27. Ait. n. 20. Purſh n. 7. Jacq. Auſtr. t. 159. Curt. Mag. t. 1120. (not 1170.) Crantz Auſtr. faſc. 2. 102. t. 3. f. 1. (A. n. 1155; Hall. Hiſt. v. 2. 65, excluding the references to Matthiolus and Lobel. Ranunculus alpinus, narciſſi flore, et R. montanus albus hirſutus; Bauh. Hiſt. v. 3. app. 844, 845. R. montanus 2 and 3; Cluſ. Hiſt. v. 1. 235. R. hirſutus alpinus, fl. albo, et R. montanus hirſutus purpureus; Ger. Em. 956. Aconitum candidum; Dalech. Hiſt. 1743.)

β. Willd. et De Cand. (A. faſciculata; Linn. Sp. Pl. 763. Ranunculus orientalis, aconiti lycoctoni folio, flore magno albo, vel purpuraſcente; Tourn. Cor. 20. Voy. v. 2. 106, with a plate.)

γ, monantha. De Cand. (A. dubia; Bellard. App. ad Fl. Pedem. 26. t. 5, (not 232. t. 7.)

Radical leaves ſlightly hairy, in three or five, very deep, wedge-ſhaped ſegments, with many, unequal, linear-lanceolate lobes. Flowers umbellate.—Found in mountainous paſtures, eſpecially on a calcareous ſoil, almoſt throughout the northern hemiſphere; in the Pyrenees and all the alpine countries, in Siberia, Caucaſus, Cappadocia, as well as in Canada, and on the north-weſt coaſt of America; but not in Britain, Greece, nor the Archipelago, as far as we have any information. It flowers early in ſummer, and is of an elegant appearance, though ſeldom ſeen in gardens. The *umbel* of pure white *flowers*, with obovate *petals*, occaſionally tinged, eſpecially underneath, with purple, readily diſtinguiſhes this ſpecies. The *involucrum* is ſeſſile, divided like the *leaves*, and like them hairy on both ſides, but not particularly ſo at the edges. The *germens* and broad *ſeeds* are quite ſmooth. Tournefort's plant, our β, is a very ſlight variety, with a more denſe *umbel*. We know Dr. Bellardi's *A. dubia* merely from his figure, for he himſelf never ſaw more than one ſpecimen; but we concur with profeſſor De Candolle, who appears to have occaſionally ſeen a two-flowered ſpecimen, in making it a variety. Concerning the two Siberian plants, to which De Candolle alludes, as poſſible varieties of *narciſſiflora*, we have not materials to form any opinion; nor were thoſe with which he was furniſhed quite ſatisfactory.

43. A. *umbellata*. Fringed Umbellate Anemone. Willd. n. 28. De Cand. n. 42. (A. fafciculata; Vahl Symb. v. 3. 74, excluding the fynonym. Ranunculus orientalis, napelli folio lanuginofo, flore albo; Tourn. Cor. 20.)—"Radical leaves in three or five, very deep, three-cleft, entire, denfely fringed fegments. Flowers umbellate.—Gathered by Tournefort, on the mountains of Cappadocia. De Candolle, who examined his original fpecimens, defcribes the radical *leaves* as confifting of numerous deep fegments, which are three-cleft, acute, with entire lobes, whofe margins are denfely fringed, with very long, white, clofe-preffed hairs, fuch as occur on the *footftalks*, fcarcely two inches in length. *Flower-ftalk* a palm in height, with fimilar, but more fcattered, hairs. *Involucral leaves* deeply three-cleft; their lobes entire, chiefly hairy at the edges. *Partial ftalks* two or three, fimple, longer than the *involucrum*. *Petals* five, white, oval, obtufe, externally hairy. We have Siberian fpecimens, probably fuch as M. Patrin communicated to De Candolle. Thefe anfwer to his defcription of the hairy-edged *leaves*, but feem to us not fpecifically diftinct from *narciffiflora*, with which they agree in fize, and in certain pale glands, between the fegments of the *leaves*, peculiarly vifible in thefe Siberian fpecimens, though not noticed by authors in any. We fufpect that thefe fpecimens may prove the identity of *A. umbellata* and *narciffiflora*.

44. A. *fibirica*. Siberian Tawny Anemone. Linn. Sp. Pl. 763. De Cand. n. 43. Willd. n. 13. (A. n. 41; Gmel. Sib. v. 4. 199.)—Leaves deeply three-lobed; lobes wedge-fhaped, in many deep, linear-oblong, bluntifh, fringed fegments. Involucral ones fimilar, on fhort ftalks, partly notched. Flower folitary. Petals fix, orbicular. Germens fmooth.—Native of Siberia, from the river Yeniffey to the country beyond the lake Baikal. *Gmelin*. That author fays not a word more concerning the plant in queftion. One of his fpecimens is in the Linnæan herbarium, and appears evidently allied, in the general nature of its *foliage*, as well as the fmooth *germens*, to the two laft-defcribed. The *footftalks* and the *flower-ftalk*, which is only four inches high, bear many, long, fcattered, fpreading, tawny hairs. The *flower* is an inch and a quarter broad, with orbicular fpreading *petals*, longer than the *involucrum*, and, as far as can be judged from a plant fo long dried, they appear to have been yellow, or orange-coloured, refembling a *Trollius*.

† Species not fufficiently known.

45. A. *Walteri*. Walterian Anemone. Purfh n. 5. De Cand. n. 44. (Thalictrum carolinianum; Walt. Carol. 157.)—"Radical leaves palmate, on long ftalks. Flower-ftalk radical, erect, long, fingle-flowered. Petals five. Root tuberous and fibrous." *Walter*.—Native of Carolina. Mr. Purfh never found this plant, nor could he meet with a fpecimen in Mr. Walter's herbarium; but he confidered it as more probably belonging to *Anemone* than to *Thalictrum*. Profeffor De Candolle fufpects it may prove akin to *A. parviflora*, n. 18.

46. A. *pedata*. Pedate Anemone. "Rafinefque Schmaltz in Defv. Journ. Bot. for 1808. v. 1. 230." De Cand. n. 45.—"Leaves deeply five-cleft, pedate; lobes laciniated. Stalk fingle-flowered, fhort. Petals fix."—Native of New Jerfey. *Raf. Schm.*

†† The following fynonyms could not be reduced by De Candolle to any known fpecies.

Anemone n. 1, 2. 4, 5, 6, and 9 of Matthiolus; fee the Valgrifian edition, v. 1. 563—567, where are figures of the firft five, copied in Bauhin's edition of 1598, p. 460, 461; Dalech. Hift. 442—444; and criticifed in Bauh. Hift. v. 3. 409. Thefe are very obfcure, and perhaps, as De Candolle obferves, fictitious; fome of the cuts reprefenting fpecies of *Adonis*, we fhould fay *Papaver*, rather than any *Anemone*.

A. quinta; Camer. Epit. 390, copied in Bauh. Hift. v. 3. 408, 409, by the name of A. ranunculi facie lutea. This feems a confufion of *Eranthis* (*Helleborus*) *hyemalis*, and *Ranunculus montanus*.

Ranunculus nemorofus, Anemones flore minor; Bauh. Prodr. 95.—Found at Montpellier; but not known to Magnol.

A. folio aconiti, radice rapunculi, flore ex purpurá albicante; Bauh. Hift. v. 3. 407, no figure.—Found on funny hills near Warfaw.

A. folio coriandri, radice olivæ, flore purpureo, Tabern; Bauh. Hift. ibid. Probably, as De Candolle fuggefts, *A. coronaria*.

A. folio multiplicato hirfuto, flore quadrifido, rubro, albo, cæruleo; Bauh. Hift. ibid.—Native of Italy, Sclavonia, and the Morea.

A. Anguillaræ lutea quadrifolia, foliis multifidis; Bauh. Hift. v. 3. 408.—Native of Apulia.

A. lutea Rauwolfii; Bauh. Hift. ibid.—Found about Aleppo.

Pulfatilla flore obfoleto, caule nudo; Breyn. Cent. 1. 135. Raii Hift. v. 1. 636. Pluk. Almag. 308 (not 30).—Found in the Caffubian mountains, flowering in May. Ray fufpects this to be a monfter.

P. orientalis tenuiffimé divifa et villofa, flore rubro; Tourn. Cor. 20.

A. flemmenfis; Scop. Ann. Hift. Nat. 2. 54.—Native of mount Feudo, in the Tyrol. This feems, by the author's defcription, to belong to *A. alpina*, as M. De Candolle fufpects. We do not underftand the reference of the latter to "Fl. Auftr. 2. p. 41." There is nothing to the purpofe in that vol. and page of Jacq. Fl. Auftr. nor in Scopoli's own Flora Carniolica.

A. dodecaphylla; "Krock. Silef. 2. 1. p. 235. t. 20." (A. decapetalæ var. β; Gmel. Syft. Linn. v. 2. 871.)—Found in Silefia.

To thefe may be added A. anomala, Rafinefque in Florula Ludoviciana 82.—"Leaves ternate, feffile, cut. Petals five, unequal. *Stem* about a foot high.

A. *thalictroides*. Linn. Sp. Pl. 763. Willd. n. 29. Ait. n. 21. Purfh n. 6. Curt. Mag. 866; is *Thalictrum anemonoides*; De Cand. Syft. v. 1. 186. Michaux Boreal.-Amer. v. 1. 322. See Thalictrum hereafter.

For A. *Hepatica*, Linn. Sp. Pl. 758; fee Hepatica hereafter.

ANEURISM. Subfequently to the period when the article Aneurism was inferted in the early part of this Cyclopædia, many new and valuable obfervations have been made upon the fubject; and the fuccefs of operations for the cure of the difeafe has been proved in a manner which has furpaffed the expectations of the moft fanguine. The firft grand improvement in this branch of operative furgery was unqueftionably that of not opening the tumour itfelf, but cutting down to the veffel at a certain diftance from the difeafe, and there applying the ligature fo as to impede the flow of blood into the aneurifmal fac. The removal of the fwelling was then left to the gentle and gradual action of the lymphatics; a procefs infinitely fafer than the violent and painful proceeding of laying open the large tumour with a knife, extracting the coagulated blood, and leaving an ample cavity to fuppurate. But thefe were not the only objections to the old method of operating; for the fac was opened, and the artery tied in a fituation where its coats were actually in a difeafed ftate. Hence the ligatures moftly failed in their effect; the veffel did not undergo favourably the

the adhesive inflammation by which it was to be closed; and the patient frequently either lost his life by hemorrhage, or was rescued by the performance of amputation under the worst and most disadvantageous circumstances. The genius of a Hunter was soon struck with the defects of the former plan of operating, and instead of meddling with the tumour itself, and tying the artery in a place where it was in a morbid condition, this distinguished surgeon conceived that it would be far better practice to tie the vessel where it was more likely to be found, *viz.* at a point some way from the disease towards the heart. Thus in the popliteal aneurism, he avoided the painful operation of laying open the swelling in the ham, and more skilfully and scientifically took up the femoral artery itself in the middle of the thigh. From this important innovation, all the success which has characterized this department of modern surgery has unquestionably been derived. By extending the same principles to other cases of aneurism, and putting due confidence in the competency of the collateral and anastomosing vessels to carry on the circulation, some of our present surgeons have devised and practised operations for the cure of such aneurisms, as a few years ago would have been abandoned as hopeless and inevitably fatal. Not only have the carotid, the external iliac, and the subclavian arteries been repeatedly tied with the most successful result, the internal iliac itself, whose situation seems to render it almost inaccessible to the instruments of the most skilful operator, has now had a ligature put round it in two memorable examples, one of which we have already noticed in the article SURGERY. The other operation was performed by Mr. Atkinson, of York; the case being a gluteal aneurism, the same kind of disease for which Mr. Stevens operated at Santa Cruz. The patient, whose name was Thomas Cost, aged twenty-nine, presented himself at the York county hospital, April 29, 1817. He was a tall, strong, active bargeman, not corpulent, but very muscular. He was enduring great pain from a large, renitent, pulsating tumour, situated under the glutæus of the right side, an obvious aneurism. It had existed about nine months, and was the consequence of a blow from a stone. In a consultation with Dr. Lanson and Dr. Wake, the necessity of the operation was determined upon, and it was performed on the 12th of May, without any material difficulty or interruption, except what depended on the aneurism-needle not being pliable enough, and what was the consequence of the division of, and bleeding from, the small muscular arteries. Having got command of the internal iliac artery within the pelvis, which, says Mr. Atkinson, required the complete length of the fingers to accomplish, the vessel was tied. Sufficient proof of its being the identical artery was repeatedly obtained, by the pressure upon it stopping the pulsation in the tumour. Dr. Wake, Mr. Ward, and all the pupils, were quite assured of the circumstance. The artery being then tied, the pulsation of the swelling entirely ceased. The patient went on tolerably well for some time after the operation; the pulse never exceeded 130, and, after a time, sunk to 85 or 90. He became exhausted, however, partly by the discharge, and partly by hemorrhage, and died on the 31st of May, about nineteen days after the operation. It is to be regretted, that some essential particulars are omitted in the narration of the case, especially those respecting the exact parts divided in the operation, and the place of the external incision; yet, on the whole, whoever reads the account can, we think, entertain no doubt about the important fact, *viz.* that the internal iliac was actually tied. See the Med. and Phys. Journ. vol. xxxviii. p. 267.

Although this operation did not succeed like that executed by Mr. Stevens, the record of it is highly interesting, as tending to dispel the doubts which have been entertained about the practicable nature of the proceeding. Even the aorta itself has now been tied in the human subject. Of course, the circumstances which justified such a bold proceeding were desperate in the extreme, nor could much hope of the patient's life be indulged; yet, as it was the only thing from which a possibility of preservation could be derived, we think, notwithstanding its failure, much credit is due to the enterprising surgeon who performed it. We shall introduce a few particulars of the case in another place. See AORTA.

In the article ANEURISM, in the early part of this Cyclopædia, will be found some observations tending to make the reader imagine, that this disease arises from such a kind of weakness as may be supposed to arise from the division of the outer coat or coats of an artery. We therefore take this opportunity of correcting the statement, since it has been fully proved by the experiments of Hunter, Home, Scarpa, &c. that aneurism never originates from this cause; and that even stripping off the external coat of the vessel will not give rise to such an effect.

With respect to tying the subclavian artery for the cure of axillary aneurisms, we ought to have remarked, that the operation, as performed by making an incision above the clavicle, has never had a successful result in this country; but, from a communication lately made to the Medical and Chirurgical Society of London, such an operation appears to have been recently executed with complete success by Dr. Post, of New York. We believe this to be the only instance in which this mode of operating has cured the disease, and saved the patient's life. The artery, however, has been several times taken up in this way in London; once by the late Mr. Ramsden, and again by Mr. Thomas Blizard; but their patients did not recover. The particulars of Dr. Post's case are inserted in the Medico-Chirurgical Trans. vol. ix. p. 185, &c.

ANGAR ISLAND, in *Geography*, an island of the Persian gulf, somewhat larger than Ormuz, and equally barren. It is now uninhabited, but presents traces of former population in the ruins of a considerable town, and many reservoirs for water. It has two wells and a stream of good water, is covered with pits of salt and metallic ores, and also a soft rocky substance resembling lava: its hills, which are overspread with shells of oysters and other fish, abound in wild goats, rabbits, and partridges. It forms an excellent harbour, which has been recommended for a settlement.

ANGELO AMERIGI, &c. l. 7, *r.* Domenichino; l. 17, after life, add—The master-piece of all his works, *viz.* the Entombing of Christ, is now in the Louvre at Paris.

ANGIOPTERIS, in *Botany*, from αγγος, *a vessel*, and πτερις, *a fern*, a faulty name, as being composed of one already established.—Hoffm. Comm. Gott. v. 12. 29. Willd. Sp. Pl. v. 5. 69. Swartz in Schrad. Journ. for 1801. 273. t. 2. f. 4. Syn. Fil. 166. (Clementea; Cavan. Leccion. 553.)—Class and order, *Cryptogamia Filices*; sect. *exannulatæ*. Nat. Ord. *Filices dorsiferæ*.

Eff. Ch. Capsules aggregate, in elliptical, crowded, masses, obovate, of two equal valves, and one cell, without a ring. Involucrum none.

This is one of those curious genera of ferns, which like DANÆA, GLEICHENIA, and MARATTIA, (see those articles,) bear their capsules on the back of the leaf, or frond, without either a ring or involucrum. In the present instance, indeed, these *capsules* are not of many cells, like those of *Danæa* and *Marattia*, but as perfectly simple as in OSMUNDA already described, or BOTRYCHIUM hereafter to be be mentioned. They are, however, not difperfed, or irregularly placed, but compofe oval *maffes*, of twelve or more *capfules*, which maffes are ranged fide by fide, in a denfe uninterrupted line, near the margins of each *leaflet* of the *frond*, a vein from the mid-rib running along the bafe, or infertion, of each mafs, between its two rows of capfules. That thefe *maffes* are determinate affemblages of capfules of an appropriate figure, is evinced by their having at each end a folitary tranfverfe capfule, completing their oval outline, which is not perfectly expreffed in Dr. Swartz's figure. The genus is, doubtlefs, very diftinct; and as its prefent name is not only faulty, but unmeaning, it would be well if *Clementea*, in honour of an able cryptogamic Spanifh botanift, Don Simon de Roxas Clemente, had been retained. We fhould certainly now, without fcruple, have reftored it, were there not feveral other names of ferns, compofed of *pteris*, which muft ftand or fall with *Angiopteris*.

1. A. *evecta*. Tall Angiopteris. Hoffm. Comm. Gott. v. 12. 29. t. 5, excluding the fynonyms, except Forfter's. Swartz Syn. Fil. 166. 395. Willd. n. 1. (Polypodium evectum; Forft. Prodr. 81. Clementea palmiformis; Cavan. Leccion. 554.)—Native of the Society ifles, and of Maria's iflands. We have an Otaheite fpecimen from Mr. Menzies. The *main ftem* is faid to be arborefcent, five feet high, and a fpan in diameter. *Fronds* fix feet long, doubly pinnate; *leaflets* from two to four inches long, oppofite, feffile, linear-lanceolate, taper-pointed, fmooth, as well as their *common ftalk;* their margins finely crenate, the point ferrated. *Capfules* brown, fmooth, very numerous, fcarcely larger than grains of fea-feed.

ANGLE, Rectilinear, l. 2, for I. *r.* II.

Angle *at the Periphery*, for I. *r.* II.

ANGOY. See Goy and Loango.

ANGRA, l. 1, *r.* Terceira.

ANGUILLA. For Mytus *r.* Myrus.

ANGUILLARIA, in *Botany*, a genus dedicated by Mr. Brown, to the memory of Luigi Anguillara, (fee that article,) apothecary, in the univerfity of Padua, to the Venetian republic, who left an Italian work on the *Materia Medica*, which has been publifhed at various times, and tranflated into Latin. Haller fpeaks of its author as deeply learned in this fubject, and perhaps the beft Italian botanift of the earlier part of the fixteenth century, having travelled much in Europe and the Levant, and ftudied critically the writings of thofe who had gone before him. Gærtner has called a genus *Anguillaria*, from the fingular appearance of its embryo, refembling an eel, *Anguilla;* but this is the Ardisia of all authors at prefent. (See that article.)—Brown Prodr. Nov. Holl. v. 1. 373.—Clafs and order, *Hexandria Trigynia*. Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juff. *Melanthaceæ*, Brown.

Gen. Ch. *Cal.* none, unlefs the corolla be fo called. *Cor.* Petals fix, lanceolate, inferior, fpreading, equal, deciduous, each furnifhed with a claw. *Stam.* Filaments fix, inferted into the bafe of each petal, awl-fhaped, fhorter than the corolla; anthers oblong, peltate, reverfed. *Pift.* Germen fuperior, oblong, furrowed; ftyles three, fpreading, fhorter than the ftamens; ftigmas acute. *Peric.* Capfule ovate-oblong, naked, of three cells and three valves, the partitions from the middle of each valve. *Seeds* numerous, nearly globular.

Eff. Ch. Calyx none. Petals fix, equal, ftalked, deciduous. Stamens inferted into the claws. Stigmas acute. Capfule of three cells, with many feeds.

Obf. *Anguillaria* is nearly akin to Ornithoglossum. (See that article.) It confifts of herbs, exactly refembling the Cape fpecies of *Melanthium*, efpecially in their *leaves* and *roots*. The *flowers* are fometimes dioecious, or polygamous. The claw of each *petal* is, in fome inftances, marked with a double gland. *A. indica*, in habit, colour of the *flowers*, the perfectly deciduous *corolla*, and perhaps the fituation of the *embryo*, differs from the reft; can it be a diftinct genus? *Brown.*

1. A. *dioica*. Dioecious Anguillaria. Br. n. 1.—"Flowers fpiked, dioecious. Claws of the petals fomewhat ftriped at the upper part."—Obferved by Mr. Brown, at Port Jackfon, New South Wales, as well as in Van Diemen's ifland.

2. A. *biglandulofa*. Glandular Anguillaria. Br. n. 2.—Flowers united. Spikes few-flowered. Claws of the petals with two glands at the upper part.—Sent from Port Jackfon, by Dr. John White, where alfo it was gathered by Mr. Brown. The *ftem* is folitary, from four to fix inches high, fimple, round, bearing two diftant, linear, fmooth, recurved *leaves;* fheathings inflated, and broad at their bafe. *Spike* folitary, terminal, zigzag, of from three to five pale, perhaps yellowifh, *flowers*, half an inch broad, each *claw* bearing a femi-lunar, glandular, prominent, dark-coloured glandular fpot.

3. A. *uniflora*. Single-flowered Anguillaria. Br. n. 3.—"Stem fingle-flowered. Leaves lax, with hooded fheaths."—Native of Van Diemen's ifland.

4. A. *indica*. Indian Anguillaria. Br. n. 4. (Melanthium indicum; Linn. Mant. 2. 226. Willd. Sp. Pl. v. 2. 268.)—Stem with few flowers. Partial ftalks longer than the petals; the fide-ones having a collateral leafy bractea. Leaves ftraight, with tight fheaths.—Native of Tranquebar and Pondicherry, as well as of the tropical part of New Holland. *Root* bulbous. *Stem* from fix to ten inches high, fimple, erect, fmooth and flender. *Leaves* two or three, linear, taller than the ftem. *Flowers* terminal, ufually two or three, one much earlier than the others, on angular ftalks, with lanceolate *bracteas* various in fize and number. *Petals* narrow, of a dark dull purple, as well as the *ftyles*, which are dilated and revolute. *Capfule* elliptical, crowned with the permanent *ftyles*.

ANGUIS, l. 9, *dele* which fee refpectively, and add—See Serpentes.

ANGULOA, in *Botany*, named in honour of Francis de Angulo, a Spanifh naturalift, of whom or his works we have no information.—"Ruiz et Pavon Prodr. Fl. Peruv. et Chil. 118. t. 26." Swartz Orchid. in Schrad. Neues Journal, v. 1. 89.—Clafs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth fuperior, reverfed, of three ovato-lanceolate, concave, converging leaves. *Cor.* Petals two, refembling the calyx, but rather narrower. Nectary a lip fhorter than the calyx, ftalked, pitcher-fhaped, fomewhat bell-fhaped, fplit longitudinally at the inner fide, two-lobed; lobes rounded, reflexed at the margin; having in the notch in front a fmall, lanceolate, reflexed fegment; in the pofterior part another, tongue-fhaped, concave, erect appendage. *Stam.* Anther a vertical, large, hemifpherical, incumbent lid, pointed in front, of two cells, deciduous; maffes of pollen two, globular. *Pift.* Germen inferior, cylindrical; ftyle erect, gibbous, three-toothed at the top, the middle tooth with three points; ftigma tranfverfe, in front. *Peric.* Capfule with fix angles, three of them larger than the reft, of one cell, and three valves. *Seeds* numerous.

Eff. Ch. Calyx reverfed, converging. Petals rather narrower than the calyx-leaves. Lip ftalked, pitcher-fhaped, two-lobed, fhorter than the calyx. Anther a deciduous lid.

1. A.

1. A. *uniflora*. "Syſt. Veg. Peruv. et Chil. 228."—Native of Peru, about Muna, Tarma, and Chincao.

ANHYDRITE. See MINERALOGY, *Addenda*.

ANJENGO, l. *ult*. N. lat. 8° 39′. E. long. 76° 40′.

ANIGOZANTHUS, in *Botany*, perhaps from ανοιγω, *to expand*, or *be apparent*, and ανθος, *a flower*, as the author commends its beauty.—Labillard. Voyage, Engl. ed. v. 1. 441. Gawler, now Ker, in Curt. Mag. v. 29. 1151. Brown Prodr. Nov. Holl. v. 1. 301. Ait. Hort. Kew. v. 2. 222.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Hæmodoraceæ*, Brown.

Gen. Ch. *Cal.* none, unleſs we take the corolla for ſuch. *Cor.* of one petal, ſuperior, tubular, externally clothed with compound hairs; tube curved, rather ſwelling upwards; limb in ſix deep, irregular, lanceolate, acute, unequal ſegments, much ſhorter than the tube, directed upwards; the two lowermoſt largeſt and moſt ſpreading. *Stam.* Filaments ſix, awl-ſhaped, inſerted into the mouth of the tube, ſhorter than the limb, oppoſite to its ſegments, and having a ſimilar direction; anthers linear-oblong, erect, burſting lengthwiſe in front. *Piſt.* Germen inferior, oval; ſtyle thread-ſhaped, aſcending, on a level with the ſtamens, deciduous; ſtigma undivided, tumid. *Peric.* Capſule nearly ſpherical, of three cells and three valves, crowned with the permanent corolla, burſting at the ſummit. *Seeds* numerous, angular, inſerted into the inner angle of each cell.

Eſſ. Ch. Corolla ſuperior, tubular, incurved; limb irregular, in ſix deep diviſions. Stamens inſerted into the throat, aſcending. Seeds angular.

A genus of perennial herbs. *Root* of numerous thick faſciculated fibres. *Stem* unbranched, except at the top. *Leaves* ſword-ſhaped, turned, half-ſheathing at the baſe. *Flowers* ſomewhat corymboſe, in ſhort *ſpikes* (rather *cluſters*) with a lanceolate *bractea* at the baſe of ſome of the partial ſtalks. *Brown.*

1. A. *rufa*. Reddiſh Anigozanthus. Labill. Voy. as above 441. t. 22. Nov. Holl. v. 2. 119. Brown n. 1.—"Stem permanently downy. Anthers pointleſs."—Native of Lewin's land, in dry ſandy deſarts, where it flowers in December. The *ſtem* is two feet or more in height, round, moſt downy in the upper part; ſomewhat leafy below. *Leaves* linear, acute, narrow, entire, finely ſtriated. *Panicle* corymboſe, downy. *Flowers* externally covered, like the whole of the panicle, with reddiſh, branched and tufted hairs. Their *partial ſtalks* are ſhort. Labillardiere's figure repreſents the *anthers* with a point, but not an incurved one. Nothing is recorded concerning the colour of the inſide of the flower. The *ſtamens* appear to be dilated at the baſe.

2. A. *flavida*. Ruſſet-green Anigozanthus. Br. n. 2. Ait. n. 1. Redout. Liliac. t. 176. Curt. Mag. t. 1151. (A. grandiflora; Saliſ. Parad. t. 97.)—"Stem and leaves very ſmooth. Down of the panicle deciduous. Anthers with a little reflexed point."—Obſerved by Mr. Brown on the ſouth-weſt coaſt of New Holland. We rely on that gentleman for the above ſpecific characters; otherwiſe we ſhould, like Mr. Ker, have ſcarcely conſidered theſe two plants as diſtinct. The preſent is ſaid to have been ſent to Kew by Mr. Good, in 1803. It was raiſed from ſeed, in Mr. Vere's garden, by Mr. Anderſon, now of Chelſea, who found it required merely to be protected from froſt, and flowered during moſt part of the ſummer. The *leaves* are ſword-ſhaped, much broader than the foregoing. *Flowers*, according to Mr. Brown, ſmaller than in that ſpecies. They ſeem to be two inches long, externally green, covered with red, tufted, branched hairs, as well as their *footſtalks*; inſide of the limb ſmooth, dull purple. *Anthers* red on one ſide, yellow on the other, not repreſented with ſo much of a point in the Botanical Magazine, as thoſe of the firſt ſpecies in Labillardiere's figure. We have ſeen no ſpecimens of either. M. Redouté has detected the ſame ſpecific marks as Mr. Brown, and is the author of the above name. He had ſpecimens of both from his friend Labillardiere, and on minute examination determined them to be moſt probably diſtinct. The *flowers* of *A. flavida* are ſmaller in his figure than in the Botanical Magazine.

ANIMAL FLOWER, l. *ult*. See CALENDULA.

ANISACANTHA, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 410. See SCLEROLÆNA.

ANISOMELES, from ανισος, *unequal*, and probably μηλα, *the cheeks*, or *parts ſurrounding the mouth*, alluding to the great difference in ſhape and ſize between the upper and under lips of the corolla.—Brown Prodr. Nov. Holl. v. 1. 503. Ait. Hort. Kew. v. 3. 364.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Brown.

Eſſ. Ch. Calyx tubular, five-cleft, with ten furrows. Upper lip of the corolla ſmalleſt, undivided; lower three-cleft, middle ſegment two-lobed. Stamens prominent, aſcending. Anthers of the ſhorter ones with two adjoining cells; often the longer ones halved, or diſſimilar. Seeds ſmooth.

Downy herbaceous plants, growing within the tropics. *Leaves* crenate. *Flowers* whorled, with minute *bracteas*. *Calyx* glandular. *Corolla* purple. The genus is akin to *Ajuga* and *Teucrium*, but ſufficiently diſtinct from both one and the other. The upper lip of *Ajuga* is extremely ſhort, and has a ſmall central notch. Its *anthers* are obſerved by Mr. Brown to be uniform, kidney-ſhaped, of only one cell; and the *ſeeds* reticulated.

1. A. *moſchata*. Muſky Aniſomeles.—Leaves elliptical, downy and hoary like the ſtem. Flowers few in each whorl. Calyx greyiſh, with conſpicuous glands.—Gathered by Mr. Brown, as well as the two following ſpecies, in the tropical part of New Holland.

2. A. *inodora*. Scentleſs Aniſomeles.—Leaves elliptical, nearly ſmooth; dotted beneath. Whorls remote. Calyx green, with conſpicuous glands.

3. A. *ſalvifolia*. Sage-leaved Aniſomeles.—Hoary and downy. Leaves lanceolate; ſoft and ſmooth above; rugged beneath. Whorls many-flowered. Glands of the calyx imbedded in ſoft down.

4. A. *ovata*. Broad-leaved Aniſomeles. Brown in Ait. n. 1. (Nepeta indica; Linn. Sp. Pl. 799, excluding the ſynonyms. Willd. Sp. Pl. v. 3. 57. Ballota diſticha; Linn. Mant. 83. Ait. ed. 1. v. 2. 304. Willd. Sp. Pl. v. 3. 108. Marrubium odoratiſſimum, betonicæ folio; Burm. Zeyl. 153. t. 71. f. 1.)—Leaves ovate, or ſomewhat heart-ſhaped, ſtrongly crenate or ſerrated. Whorls many-flowered. Bracteas linear. Calyx hairy; with ſcarcely viſible glands.—Native of the Eaſt Indies, from whence it is ſaid to have been imported by the firſt earl of Bute, in 1783. The plant has hardly perhaps been preſerved in the ſtoves, being an annual, of no great beauty, however intereſting to the curious botaniſt. The whole *herb* has a velvet-like ſoftneſs, owing to its fine, ſhort, ſoft, depreſſed hairs; its habit and ſize very like our *Ballota nigra*. The *leaves* ſometimes very much reſemble thoſe of the common *Urtica dioica*, in ſize, ſhape, and ſerratures, but are often rather crenate than ſerrated. *Whorls* for the moſt part crowded into thick, partly leafy, *ſpikes*. Calyx very curiouſly reticulated with copious tranſverſe veins; its teeth large, broad, pungent. The ſhort upper lip of the *corolla* did not eſcape Linnæus, who founds thereon his ſpecific character of this plant, as a *Nepeta*. His

herbarium

herbarium proves Mr. Brown's suspicion to be correct, of *Ballota disticha* being the same plant. The *seeds* well answer to the generic character of *Anisomeles*, being beautifully polished, elliptical, of a shining black.

These plants, at least the three New Holland species, seem most allied to *Teucrium Iva* and *salicifolium* of Linnæus, now removed to *Ajuga*. The musky odour of the first species is found in *Ajuga Iva*, whence a singular variety of that plant, with regular flowers, being taken by Forskall for a new genus, received the name of MOSCHARIA. (See that article.) The elliptical form of the *leaves* in *Anisomeles moschata*, rare in this natural order, agrees nearly with the Linnæan *Teucrium Laxmanni*, which is likewise an *Ajuga*. See TEUCRIUM.

ANISOPOGON, from ἀνισος, *unequal*, and πωγων, *a beard*, alluding to the inequality and dissimilarity of the awns.—Brown Prodr. Nov. Holl. v. 1. 176.—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eff. Ch. Calyx of two lax, membranous, ribbed, equal valves, single-flowered. Corolla stalked, of two valves; outer cylindrically involute, three-awned at the top, the middle awn twisted, the lateral ones bristle-shaped; inner longer, unawned.

1. A. *avenaceus*. Oat-like Anisopogon.—Native of the neighbourhood of Port Jackson, New South Wales. A grass three feet high, resembling an AVENA. (See that article.) *Stems* unbranched. *Leaves* involute, with a fringed *stipula*. *Panicle* loose. *Calyx-glumes* large. The outer valve of the *corolla* is silky, connected with its awn by an obsolete joint. A small bristle, at the base of the inner valve, indicates this genus to be more strictly allied to DANTHONIA, (see that supplementary article,) than to ARISTIDA, which latter the reader will find in its proper place.

ANKER. Add—An anker of brandy contains 10 gallons. It is also a liquid measure not only at Amsterdam, but at Copenhagen, Hamburgh, and other places. (See VAT.) At Copenhagen, a fuder of wine contains 2 pipes = 4 oxhofts = 6 ahms; the ahm or tierce being = 4 ankers = 40 stubgens = $77\frac{1}{2}$ kannes = 155 pots = 620 pocles. A stuckfass is = $7\frac{1}{2}$ ahms = 30 ankers: 32 pots hold the weight of a Danish cubic foot of water, each being $6\frac{1}{2}$ Danish inches high, $3\frac{1}{4}$ ditto wide, and containing 64 cubic inches: 55 Danish pots, or $27\frac{1}{2}$ Danish kannes = 14 English gallons, and an ahm = $39\frac{1}{2}$ gallons nearly. The ahm at Hamburgh is the sixth part of the fuder, and is = 4 ankers = 5 eimers = 20 viertels = 40 stubgens = 160 quartiers = 320 oessels. See MEASURE.

ANN, QUEEN, in *Geography*, a county of Maryland, containing 16,648 inhabitants, of whom 6381 are slaves.

ANNA, a money of account in India. See RUPEE.

ANNAPOLIS ROYAL, l. 13, for stem *r.* stern.

ANN-ARUNDEL, l. 4, *r.* 26,668; l. 5, *r.* 12,693.

ANNONA, in *Botany*, (see our former article,) is a name of barbarous origin, made into Latin by Linnæus, in allusion, as he tells us in Hort. Cliff. 222, to the value of the fruit, as yielding a grateful harvest or crop, *annona*, to the people where it grows. *Anona* is generally supposed to have been the original word, and is accordingly retained by the French school. But by Bauhin's Pinax, *Annona* appears to have full as authentic claims, on the score of priority, as *Anona*. The latter is moreover a Portuguese corruption of the original *Anon*, which Clusius taking from Oviedo, makes *Anon*, *Anonis*. *Anona*, *æ*, is very incorrect. We trust our learned friends in France will not insist on such an inaccuracy, any more than on their great countryman Plumier's name, *Guanabanus*, which they have commendably rejected, though of older authority than Linnæus or Jussieu.—Linn. Gen. 279. Schreb. 374. Willd. Sp. Pl. v. 2. 1264. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 333. Juss. 283. De Cand. Syst. v. 1. 466. "Dunal Monogr. 58." Lamarck Dict. v. 2. 123. Illustr. t. 494. Gærtn. t. 138. (Guanabanus; Plum. Gen. 42. t. 10.)—Class and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juss. *Anonaceæ*, De Cand.

Eff. Ch. Calyx in three, more or less deep, concave, somewhat heart-shaped, sharpish lobes. Petals six, thickish, the three innermost smaller or wanting. Anthers numerous, nearly sessile, covering the receptacle; angular and dilated at the summit. Germens numerous, coalescing into a single sessile berry, whose coat is either tubercular, scaly, or reticulated, the internal substance pulpy, surrounded with numerous, single-seeded cells. De Candolle.

N.B. In our former article, line 12, read (or a compound berry, as in *Rubus*).

The species are trees or shrubs, whose *bark* is often reticulated, glandular, and aromatic. *Leaves* undivided, sometimes besprinkled with pellucid dots. *Flower-stalks* either axillary, or opposite to the leaves, often solitary, bearing one or more *flowers*, sometimes accompanied by small *bracteas*.

Obs. Very rarely the *calyx* has four lobes. The inner *petals* are occasionally imperfect.

Twenty-seven species are defined by De Candolle, but of these five are marked as imperfectly known. They are disposed in five sections, by the shape and consistence of their petals.

Sect. 1. *Petals concave, thick, rather coriaceous, either heart-shaped or ovate.* Eleven species, subdivided as follows.

* Outer petals acute; inner ones obtuse, and rather smaller. Sp. 1—4.

** Outer petals obtuse. Sp. 5.

*** Petals all acute; inner ones rather the smallest. Sp. 6—11.

A concise view of the species will be sufficient, following the numbers of De Candolle.

1. A. *muricata*. (See ANNONA n. 1.) Linn. Sp. Pl. 756. Jacq. Obs. fasc. 1. 10. t. 5. (Zuursack; Merian Surin. t. 14.)—Leaves ovato-lanceolate, smooth, somewhat shining. Stalks solitary, single-flowered. Outer petals heart-shaped, pointed; inner obtuse. Fruit armed with fleshy pointed tubercles.—Native of South America and the West Indies. The *flowers* are large, yellow. *Fruit* as big as a large pear, green or yellow, much esteemed.

2. A. *purpurea*. "Dunal Monogr. 64. t. 2."—Leaves nearly sessile, lanceolate; rather rusty beneath. Flowers axillary, almost sessile. Outer petals heart-shaped, acute; inner roundish.—Found in Mexico. *Fruit* unknown. Outer *petals* yellowish-brown; inner purple.

3. A. *Humboldtii*. "Ibid. 64. t. 3."—Leaves oblong, pointed, smooth, slightly dotted. Stalks axillary, solitary, short, single-flowered. Outer petals ovate, somewhat heart-shaped, acute; inner bluntish.—Found by Humboldt and Bonpland, in the South American province of Cumana. A *shrub*. *Flowers* yellowish, dotted with purple and red.

4. A. *laurifolia*. "Ibid. 65. (Anona, &c.; Catesb. Carol. v. 2. t. 67.")—Leaves ovato-lanceolate, smooth. Stalks solitary, single-flowered, drooping. Outer petals heart-shaped, acute; inner rounded. Fruit smooth, obovate.—Native of South America, and some parts of the West Indies. *Outer petals* large, green; *inner* white. *Fruit* green, shaped like an inverted pear.

5. A. *obtusiflora*. "Tussac Antill. t. 28. Dunal Monogr. 65."—Leaves oblong-lanceolate, wavy, pointed, copiously ribbed; the young ones downy. Stalks axillary, single-flowered.

flowered. Outer petals obtuse.—Cultivated in Hispaniola. *Fruit* roundish, tuberculated.

6. A. *palustris*. (See ANNONA n. 6.) Linn. Sp. Pl. 757. (A. aquatica, &c.; Sloane Jam. v. 2. 169. t. 228. f. 1.)—Leaves ovate-oblong, coriaceous, very smooth. Flowers solitary, stalked. All the petals acute. Fruit reticulated.—Native of the banks of rivers in South America and Jamaica.

7. A. *longifolia*. Aubl. Guian. 615. t. 248. Willd. n. 6.—Leaves oblong, taper-pointed, smooth. Flowers axillary, stalked. All the petals acute. Fruit ovate, nearly globular, dotted and reticulated.—Native of the borders of creeks in Guiana. A *shrub*, fifteen feet high. *Flowers* large, purplish. *Fruit* pulpy, gelatinous, and eatable.

8. A. *punctata*. Aubl. Guian. 614. t. 247. Willd. n. 7.—Leaves ovate-oblong, acute, smooth. Flowers axillary, solitary, nearly sessile. All the petals acute. Fruit nearly globular, slightly dotted.—Found by Aublet in the forests of Cayenne and Guiana. A *shrub* twenty feet high. *Flowers* small, yellowish. *Fruit* reddish, eatable.

9. A. *peruviana*. Dunal Monogr. 67.—Leaves elliptic-oblong, acute, rather coriaceous, slightly decurrent. Stalks axillary, bracteated. Petals all acute. Fruit globose, reticulated.—Found by Humboldt and Bonpland, in bogs about Guyaquil in Peru. *Flowers* yellow; three outer *petals* marked with a red spot, near the base on the inside. *Fruit* four inches in diameter, not eatable.

10. A. *Ambotay*. Aubl. Guian. 616. t. 249. Willd. n. 13.—Leaves elliptic-oblong, acute; clothed with rusty down beneath. Flowers axillary, solitary, nearly sessile. Petals acute.—Native of woods in Cayenne. A *shrub*, eight feet high. *Flowers* greenish, minute. *Fruit* not observed by Aublet, who alone seems to have seen this species, flowering in November.

11. A. *paludosa*. Aubl. Guian. 611. t. 246. Willd. n. 4.—Leaves oblong, acute; rather downy above; downy, silky, reddish, and ribbed beneath. Flowers on short stalks. Petals all acute. Fruit ovate, tuberculated.—Found by Aublet, in boggy meadows in Guiana, flowering in November, ripening its thickly tuberculated yellow fruit in April. The *stem* is shrubby, four or five feet high. *Petals* green, externally silky.

Sect. 2. *Outer petals ovate, concave, acute, coriaceous; inner wanting. Fruit not well known, so that the plants of this section are referred to the present genus by their habit only.* Two species.

12. A. *echinata*. "Dunal Monogr. 68. t. 4."—Leaves ovato-lanceolate, rather acute; very smooth above; downy beneath. Branches rugged. Stalks solitary, single-flowered. Petals three. Fruit ovate, prickly.—Gathered by M. Patris, in Cayenne.

13. A. *sericea*. "Ibid. 69. t. 5."—Leaves ovate-oblong, pointed; smooth above; silky with rusty down, like the young branches, beneath. Flowers solitary, axillary, stalked; externally rusty. Petals three.—Found likewise in Cayenne, by M. Patris.

Sect. 3. *Outer petals linear-oblong, narrow; triangular at the point; concave at the base only; often converging, so as to conceal the organs of impregnation; the inner ones extremely minute.* Six species.

14. A. *squamosa*. (See ANNONA n. 3.) Linn. Sp. Pl. 757. Jacq. Obs. fasc. 1. 13. t. 6. f. 1. (Atamaram; Rheede Hort. Malab. v. 3. 21. t. 29.)—Leaves lanceolate, smooth, with pellucid dots. Outer petals somewhat converging. Fruit ovate, scaly.—Native perhaps of South America. *De Candolle*. Cultivated in both Indies, within the tropics. A *tree*, twenty feet high, with a spongy bark. *Flowers* green externally, white within, fœtid. *Fruit* eatable, of a pleasant taste, and fragrant scent, as big as a large apple; externally green, with tuberculated, scale-like protuberances.

15. A. *Forskahlii*. De Cand. n. 15. (A. glabra; Forsk. Ægypt.-Arab. 102. Ic. t. 15. A. asiatica; Vahl Symb. v. 3. 73. "var. β; Dunal Monogr. 71. A. squamosa; Delile Ægypt. 17.")—Leaves elliptic-oblong, smooth, dotted; glaucous beneath. Outer petals oblong, somewhat converging.—Gathered by Forskahl and by Coquebert in Egypt. Scarcely, in De Candolle's opinion, distinct from *A. squamosa*, but the *leaves* are thinner and less pointed, more distinctly dotted.

16. A. *cinerea*. "Dunal Monogr. 71. t. 8."—Leaves elliptic-oblong, almost lanceolate, dotted; downy beneath. Outer petals somewhat converging. Fruit ovate, nearly globular, scaly.—Gathered by Ledru in the island of St. Thomas, but perhaps not really wild. The young *branches*, *leaves*, *stalks*, and *flowers*, are clothed with greyish pubescence. *Flowers* stalked, two or three together. *Fruit* not unlike *A. squamosa*.

17. A. *Cherimolia*. Mill. Dict. ed. 8. n. 5. Lamarck Dict. v. 2. 124. (A. tripetala; Ait. n. 2. See ANNONA n. 2. Guanabanus Perseæ folio, flore intùs albo, &c.; Feuill. Peruv. v. 3. 24. t. 17. Trew Ehret, 16. t. 49.)—Leaves ovato-lanceolate, without dots; very finely downy and silky beneath. Outer petals slightly converging; externally downy. Fruit nearly globular, somewhat scaly.—Native of Peru, or rather perhaps of some warmer country; for Feuillée speaks of this *tree* as cultivated there with great care, for the sake of its fruit, which is very wholesome, and much esteemed, though, he adds, one of our pears or plums is certainly worth all the Cherimolias of Peru. The *tree* is twenty to twenty-four feet high, with pendulous *branches*. *Flowers* pale green, with a crimson circle in the middle. *Fruit* heart-shaped, scaly and rough, the size of a small apple, being drawn too small in Ehret's figure. De Candolle says there are three inner *petals*, though very minute.

18. A. *reticulata*. (See ANNONA n. 4.) Linn. Sp. Pl. 757. Willd. n. 5; excluding the syn. of Rumphius and Plumier. Jacq. Obs. fasc. 1. 14. t. 6. f. 2. (Anona-maram; Rheede Hort. Malab. v. 3. 23. t. 30, 31. Guanabanus fructu purpureo; Plum. Ic. 134. t. 143. f. 1; not 43. f. 2.)—Leaves oblong-lanceolate, acute, smooth, slightly dotted. Outer petals oblong, rather converging. Fruit ovate, nearly globular, tessellated like net-work.—Native of the West Indies, according to Browne and Sloane. Rheede speaks of it as only cultivated, not wild, in Malabar. A larger *tree* than *A. squamosa*, and with a more disagreeable scent. *Petals* brown underneath; yellowish-white above, dotted with purple at the base. *Fruit* the size of a large orange, but more ovate, of a shining yellowish or reddish brown, eatable. Professor De Candolle suspects that several species may be here confounded; and Dunal distinguishes the plant of Jacquin, from that of Rheede, by the reticulations of the *fruit* being somewhat pentagonal in the former, more rounded in the latter. Plumier's seems still more different from both, in having the interstices very convex, each armed with a spine. Dombey appears to have gathered and preserved under this name, in Peru, a species distinguished by broader *leaves*, not marked with pellucid dots, but with more regular and prominent pinnate ribs. All these points can be cleared up by the acquisition of authentic specimens only, or by observations made on the spot. The history of the whole genus is as yet but a sketch, nor have European botanists materials to fill up the outline.

19. A. *mucosa*. (See ANNONA n. 19.) Jacq. Obs. fasc.

fasc. 1. 16. Aubl. Guian. 618. (Manoa; Rumph. Amboin. v. 1. 136. t. 45.)—Leaves oblong-lanceolate, smooth. Outer petals spreading at the extremity. Fruit tessellated, with gibbous interstices.—Native of South America and some parts of the West Indies. Cultivated in the Molucca islands. This is said to differ from the last, in having the interstices of the *fruit* tumid, (what then becomes of Plumier's t. 143. f. 1?) its pulp more slimy, and not agreeably flavoured. The *leaves* also are somewhat narrower.

Sect. 4. *Outer petals elliptic-oblong, obtuse; inner smaller, lanceolate, bluntish. Calyx large, coriaceous, three-cleft, somewhat bell-shaped. Fruit conical, smooth?* Three species.

20. A. *glabra*. (See ANNONA n. 8.) Linn. Sp. Pl. 758. Willd. n. 10. ("A. maxima, foliis latis, fructu maximo, luteo, conoide, cortice glabro; Catesb. Car. v. 2. t. 64.") —Leaves ovato-lanceolate, smooth. Stalks two-flowered, opposite to the leaves. Fruit conical, obtuse, even.—Native of Carolina, according to Catesby. Cultivated perhaps in the West Indies. A *tree* sixteen feet high, with smooth *leaves*, much resembling those of a lemon-tree. *Calyx* reddish externally, of three broad, very short, often abrupt lobes. *Petals* six, nearly obovate, twice the length of the calyx.

21. A. *grandiflora*. Lamarck Dict. v. 2. 126. Willd. n. 17. "Dunal Monogr. 75. t. 6 and 6 a."—Leaves ovato-lanceolate, smooth, coriaceous; shining above. Stalks axillary, solitary. Fruit ovate, smooth, somewhat dotted.—Native of the Mauritius, and Madagascar. *Leaves* rather glaucous beneath. *Calyx*, and backs of the *petals*, finely downy. The inner *petals* are an inch long, being nearly equal to the outer. *Fruit* of a middling size, slightly rugged.

22. A. *amplexicaulis*. Lamarck Dict. v. 2. 127. Willd. n. 18. "Dunal Monogr. 76. t. 7."—Leaves oblong-heart-shaped, clasping the stem, acute, smooth. Stalks axillary, solitary, single-flowered.—Found by Commerson in the isles of Mauritius and Madagascar. The *leaves* are sessile; glaucous or purplish beneath, at least when dry. Three inner *petals* rather the smallest.

Sect. 5. *Annonæ not sufficiently known.* Five species.

23. A. *asiatica*. (See ANNONA n. 9.)—Linn. Sp. Pl. 758. Willd. n. 12.—Leaves oblong, pointed, without dots; downy when young.—Native of Ceylon. *Linnæus*. A specimen under this name is found in his herbarium, but there is no evidence of its being what he intended in his Fl. Zeyl. nor even in the first edition of Sp. Pl. There are neither *flowers* nor *fruit*, nor can we satisfy ourselves of this specimen being the same species as the botanists of Tranquebar send us for *A. asiatica*, which latter agrees best with *squamosa*, n. 14.

24. A. *senegalensis*. "Pers. Ench. v. 2. 95. Dunal Monogr. 75."—Leaves broadly ovate, somewhat heart-shaped, coriaceous, smooth; glaucous beneath. Footstalks finely downy. Flower-stalks two or three together, lateral, between the leaves.—Native of Senegal and Guinea. *Flowers* small. Three outer *petals* ovate, obtuse, thick, thrice the length of the calyx.

25. A.? *uniflora*. "Dunal Monogr. 76."—Leaves oblong, pointed, smooth; glaucous beneath. Flower-stalks downy, hoary, opposite to the leaves.—Native of Para, in Brasil. Young *branches* downy and hoary. *Leaves* nearly sessile. *Flowers* opposite to the uppermost leaf on each branch, with one or two orbicular leafy *bracteas*. *Calyx* in three large, deep, ovate, coriaceous segments, externally hoary. The unexpanded *petals* appear similar thereto. A beautiful species, but the genus is doubtful. *De Cand.*

26. A.? *exsucca*. "Dunal Monogr. 77."—Leaves ovate-oblong, coriaceous, smooth, like the branches, on both sides; polished above. Flower-stalks simple or divided, nearly opposite to the leaves.—Gathered in the woods of Guiana, by Mr. Alexander Anderson, whose specimens were examined by professor De Candolle in Mr. Lambert's herbarium. A handsome *tree*, with a small, entirely dry, *fruit*. *Branches* smooth from the first. *Leaves* two and a half to four inches long. *Petals* three-lobed! This surely may well be deemed a doubtful *Annona*.

27. A. *africana*. (See ANNONA n. 10.) Linn. Sp. Pl. 758. Willd. n. 14; excluding the synonyms. (A. foliis lanceolatis pubescentibus; Linn. Hort. Cliff. 222.)—"Leaves lanceolate, downy."—This is recorded in the Hortus Cliffortianus to have sprung up from African seeds. The "*habitat in Americâ*" is therefore a gross and palpable slip of the pen, in the second edition of Sp. Pl., (it is *Aethiopia* in the first,) which the editors of Linnæus's writings should have corrected; for such a contradiction of the specific name, might have induced some inquiry. Nothing appears for this species in the Linnæan herbarium. In Hort. Cliff. the *branches* are said to be rough with minute dots. *Leaves* ovate, but rather elongated; downy, and in a manner hoary, on both sides, by no means polished.

For other plants which have been referred to *Annona*, see ORCHIDOCARPUM, ASIMINA, and MONODORA.

ANOMALY, col. 4, l. 15, for 122,441 *r.* 1,222,441.

ANOMATHECA, in *Botany*, from ανομος, *out of rule*, and θηκη, *a case*; because the capsule is distinguished by its papillary roughness, from all the rest of the plants of the same natural order, that have hitherto been examined.—Ker in Sims and Kon. Ann. of Bot. v. 1. 227. Dryandr. in Ait. Hort. Kew. v. 1. 90.—Class and order, *Triandria Monogynia*. Nat. Ord. *Ensatæ*, Linn. *Irides*, Juss.

Gen. Ch. *Cal.* Sheath inferior, of two very small, elliptical, concave, leafy, nearly equal valves. *Cor.* of one petal, superior, salver-shaped; tube many times longer than the sheath, straight, nearly cylindrical, a little dilated at the mouth; limb not quite regular, in six, nearly equal, obovate, deep segments. *Stam.* Filaments three, inserted into the tube, thread-shaped, erect, much shorter than the limb; anthers vertical, oblong, converging. *Pist.* Germen roundish; style thread-shaped, about the length of the stamens; stigmas three, deeply divided, with linear, spreading segments. *Peric.* Capsule roundish-ovate, of three cells and three valves, its surface covered with small, papillary tubercles. *Seeds* numerous, round.

Ess. Ch. Sheath of two valves. Corolla salver-shaped. Stigmas three, deeply divided. Capsule minutely tuberculated.

1. A. *juncea*. Cut-leaved Anomatheca. Ker n. 1. Ait. n. 1. (Lapeyrousia juncea; Curt. Mag. t. 606. Gladiolus junceus; Linn. Suppl. 94. Thunb. Glad. n. 18. Cap. v. 1. 201, excluding the synonym of Jacquin! Redout. Liliac. t. 141. G. polystachius; Andr. Repos. t. 66.) —Found by Thunberg, in Lange Kloof, at the Cape of Good Hope, flowering from October to December. It flowers in May in our green-houses, where it is not uncommon, being easily propagated by offsets and by seed. The *bulb* is ovate. *Leaves* radical, equitant, sword-shaped, acute, dark-green, many-ribbed, with a deep sloping notch at their inner edge, from the base about half way up. *Stalk* a foot high, being twice as tall as the leaves, round, rather slender, branched, smooth, bearing many solitary, unilateral, slightly zigzag, *spikes*, of elegant, rose-coloured, scentless *flowers*; the irregularity of whose *corolla* is evinced by the three lower segments being each marked with a deep red spot, and the middle one being moreover white

white at the base. *Capsule* rough, with crowded, glandular, or papillary, protuberances. Mr. Ker conceives *Ixia excisa*, Linn. Suppl. 92, or at least one of its varieties, to be the same plant; but the specimens in the Linnæan herbarium are surely different. They may indeed prove another species of *Anomatheca*, but this can only be ascertained by their *capsule*, which is wanting in all of them. *A. juncea* is certainly *Gladiolus amabilis* of Mr. Salisbury's Prodr. 41, (not 4,) as appears by a specimen from himself. He was the first author who noticed the peculiar roughness of the *capsule*, which he compares to the *fruit* of a *Caucalis*. Few of the same natural order can be much more distinct than Jacquin's *G. floribundus*, Ic. Rar. t. 254, cited by Thunberg, with a faulty reference, in his *Fl. Capensis*.

ANONACEÆ, the fourth natural order of the *Dicotyledoneæ*, or *Exogenæ*, of De Candolle; separated by him from the *Coadunatæ* of Linnæus, and answering to the *Anonæ* of Jussieu, being thus named after *Anona*, one of the chief genera. De Candolle thus defines the order.

Calyx of three lobes, very rarely of four. *Petals* six, in two rows, alternate with each other; the inner row sometimes wanting. *Stamens* indeterminate, unconnected. *Germens* indeterminate; very rarely solitary. *Fruit* compound, either separate or combined. *Seed* with internal processes, separating the portions of the albumen.

Fructification. *Calyx* inferior, short, permanent, more or less deeply three-cleft, very rarely with four lobes. *Petals* six, inferior, in a double row, alternate with each other, mostly coriaceous, and somewhat resembling an inner calyx, imbricated in the bud, though each row is valvular in that state; the inner one sometimes larger, sometimes smaller, rarely wanting. *Stamens* numerous, close-pressed, generally covering the hemispherical disk (or receptacle of the flower); filaments very short; anthers nearly sessile, with glandular, quadrangular, occasionally nectariferous points; their cells bursting longitudinally, externally, and downwards. *Germens* mostly numerous, crowded closely together, in some instances aggregate or combined, in others, though very rarely, and possibly from abortion, solitary. *Styles* one to each germen, short. *Fruits* as many as the germens, sessile or stalked, sometimes combined, either pulpy or capsular, with one or many *seeds*, which are ovate, or ovate-oblong, in one or two rows, inserted into the inner corner of each fruit. Their *skin* is brittle, membranous or crustaceous, having internal, sometimes plaited, processes, either flat or awl-shaped, insinuating themselves into the chinks or perforations of the *albumen*. The latter is fleshy, hard, shaped like the seed, very often bordered with a depressed furrow, accompanied by transverse plaits, or contiguous perforations. *Embryo* minute, situated in the umbilical region of the albumen. *Cotyledons* short. *Radicle* nearly cylindrical.

Habit. Trees or shrubs, with round, often slightly two-ranked, *branches*, whose *bark* is mostly either reticulated, or warty; the young ones generally downy. *Leaves* alternate, connected with the stem by a joint, either sessile or with short footstalks, simple, almost always entire, or scarcely toothed, with pinnate veins; folded, and often downy, when young. *Stipulas* none. *Flower-stalks* mostly axillary, sometimes lateral, or opposite to the leaves, solitary, generally furnished with small *bracteas*; they are shorter than the leaves, bearing one or many *flowers*, and not uncommonly twisted into a hook, some of the flowers being abortive.

Qualities. The roots, bark, leaves, and fruits, especially such as are capsular, are acrid, pungent, aromatic, and stimulating, often used for seasoning. Those fruits which are of a fleshy nature are eatable, and esteemed in tropical climates.

History. The *Anonaceæ*, being all strangers to Europe, were unknown to the ancient botanists. Caspar Bauhin has scarcely indicated two species, Linnæus thirteen, Willdenow thirty-six, Persoon forty-four; but Dunal in a most excellent treatise, almost literally followed by De Candolle, defines one hundred and five. Of these, five are natives of the temperate zone in America; forty-seven of the tropical regions of the same quarter of the globe; eight of equinoxial Africa; three of the Mauritian isles; twenty-six of India or its islands; six of China and Japan; two of New Holland; and there are six whose native country is uncertain.

Affinities. This order agrees with the *Magnoliaceæ* of the same learned author, in having the parts of the flower disposed in a ternary order, anthers united to the filaments, numerous stamens and pistils; but differs very essentially (according to him) in having no stipulas, and differently shaped anthers as well as seeds. Some few climbing species make an advance towards the *Menispermeæ*; but the indefinite stamens, and the structure of the fruit, afford a distinction. The *Anonaceæ* differ from all other polypetalous orders, with a superior germen, in the ternary structure of their flowers, as well as in the very peculiar insertion of the internal processes of the seed into its albumen. Such a structure was indeed found by Mr. Brown, in his *Eupomatia* (hereafter to be described in its proper place); a genus otherwise very different from the order before us.

The genera enumerated by De Candolle are, *Kadsura* of Jussieu; *Anona* of Linnæus; *Monodora* of Dunal; *Asimina* of Adanson; *Porcelia* of Ruiz and Pavon; *Uvaria*, *Xylopia*, and *Unona* of Linnæus; and *Guatteria* of Ruiz and Pavon.

ANOPLOTHERIUM, in *Natural History*, an animal of an extinct genus, whose remains are found in a fossil state in the vicinity of Paris. It is so called by Cuvier, to denote that it was without weapons, having no canine teeth. In the natural system, this animal should be placed between the horse on one side, and the hippopotamus, the pig, and the camel on the other. The remains of five species of the anoplotherium have been discovered. The largest was the size of a small horse; the smallest not larger than a small rabbit. See Strata *in the Vicinity of Paris*.

ANOPTERUS, in *Botany*, owes that appellation to Labillardiere, who meant to express the situation of the wing, at the upper part of the seed, the word being formed from ανω, *upwards*, and πτερον, *a wing*.—Labill. Nov. Holl. v. 1. 85. Brown Prodr. Nov. Holl. v. 1. 457.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Gentianæ*, Juss. or perhaps *Ericæ*, according to Mr. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in six deep, acute, equal, spreading segments, permanent. *Cor.* of one petal, bell-shaped; tube very short; limb in six deep, equal, concave, obtuse, imbricated segments, much longer than the calyx. *Stam.* Filaments six, awl-shaped, smooth, equal, inserted into the tube of the corolla, opposite to each segment, and about half as long; anthers incumbent, heart-shaped, obtuse, two-lobed. *Pist.* Germen superior, ovate; style short, cylindrical, erect; stigma in two acute lobes. *Peric.* Capsule elliptic-oblong, of one cell and two valves. *Seeds* numerous, inserted into the margin of each valve, pendulous, imbricated, each crowned with an obovate, obtuse, membranous wing, thrice its own length.

Ess. Ch. Calyx in six segments, inferior, permanent. Corolla in six segments, with a very short tube. Stigma cloven.

cloven. Capsule of one cell and two valves. Seeds imbricated, pendulous, winged.

1. A. *glandulosa.* Glandular Anopterus. Labill. Nov. Holl. v. 1. 86. t. 112.—Native of Cape Van Diemen. An elegant slender *tree*, about thirty feet high, very smooth in every part. *Leaves* scattered, occasionally opposite, obovate-oblong, serrated, single-ribbed, coriaceous, about four inches long, rather bitter to the taste; tapering at the base; a black prominent gland on the inner edge of each serrature. *Clusters* terminal, simple, half the length of the leaves, either solitary, or as many as four together. *Corolla* about the size and shape of *Pyrola rotundifolia;* of its colour nothing is recorded, Labillardiere's descriptions having been drawn up from his dried specimens after his return to Europe. Mr. Brown remarks, that the *embryo* is minute, nearly globose, enclosed in a fleshy *albumen;* the *radicle* superior.

ANREDERA, a name of which we find no explanation. Juss. Gen. 84. 448.—Class and order, *Pentandria Monogynia.* Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juss.

Ess. Ch. Calyx in two deep segments; keeled at the back. Corolla none. Style divided. Stigmas two. Seed clothed with the compressed, membranous, two-winged calyx, emarginate at the top and bottom.

1. A. *scandens.* Climbing Anredera. (Fegopyrum scandens, seu Volubilis nigra major, flore et fructu membranaceis, subrotundis, compressis; Sloane Jam. v. 1. 138. t. 90. f. 1.)—Native of Jamaica, growing among trees near the ruins of a monastery by the town. *Sloane.* The *stems* are twining, round, red, succulent, climbing to the height of seven or eight feet. *Leaves* alternate, heart-shaped, or somewhat deltoid, succulent, smooth, entire, two inches and a quarter long, on *footstalks* half an inch in length. *Clusters* numerous, alternate, many-flowered, axillary and terminal. *Flowers* orbicular, compressed, green, bordered with a thin white membrane formed of the keel of each *calyx-leaf.* As the *seed* ripens, they turn brown. Sloane compares them to parsnip-seed. Swartz seems not to have noticed this plant. Its habit is nearly that of *Basella.*

ANTELOPE, col. 3, l. 7 from bottom, *r.* BUBALIS or CERVINE *Antelope.*

ANTHERYLIUM, in *Botany*, so named, either by Vahl or Von Rohr, apparently from ανθηρα, *an anther*, and υλη, *wood*, or *materials of any kind*, in allusion to its numerous and conspicuous anthers.—Vahl in Mem. of the Nat. Hist. Soc. of Copenhagen, v. 2. 211. Willd. Sp. Pl. v. 2. 980.—Class and order, *Icosandria Monogynia.* Nat. Ord. *Hesperideæ*, Linn. *Myrti*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, inferior, in four deep, lanceolate, spreading, permanent segments. *Cor.* Petals four, inserted into the calyx between its segments, large, obovate, plaited and undulated, with short linear claws. *Stam.* Filaments numerous, from about thirteen to sixteen, capillary, inserted into the calyx, longer than the corolla, permanent; anthers incumbent, convoluted, furrowed. *Pist.* Germen superior, globose; style thread-shaped, very long; stigma capitate. *Peric.* Capsule globose, obscurely triangular, of one cell, and three, occasionally four, valves, bursting at the top and deciduous. *Recept.* globose, somewhat triangular, spongy, dotted with little hollows to receive the *Seeds*, which are numerous and minute.

Ess. Ch. Calyx inferior, in four deep permanent segments. Petals four, inserted into the calyx. Capsule of one cell and three valves. Seeds numerous.

1. A. *Rohrii.* Flowery Antherylium. Vahl as above, 212. t. 8. Symb. v. 3. 66. Willd. n. 1.—Native of the West Indian island of St. Thomas. *Von Rohr*, and *West.* A *tree*, with round, grey, scattered, scarred branches; leafy, and somewhat quadrangular, in their upper part. *Leaves* nearly opposite, stalked, ovate, acute, entire, two inches long, thin, very smooth, with one rib, and many transverse veins. There is a pair of stipulaceous *prickles*, at the base of each *footstalk*, which disappear from the older branches. *Flower-stalks* axillary from the insertion of the last year's leaves, from five to eight, fewer on one side of the branch than the other, hardly an inch long, simple, single-flowered, naked, thread-shaped. *Capsule* downy, the size of a currant. Nothing is recorded of the colour of the *flowers*, nor of the qualities or use of any part. The habit of the tree is compared by Vahl to the *Legnotis* of Swartz, to which genus he supposes this to be allied. He suspects also some affinity to Aublet's CRENÆA. See that article.

ANTHOBOLUS, we presume from ανθος, *a flower*, and βωλος, *a mass*, or *lump*, the flowers forming little dense tufts. —Brown Prodr. Nov. Holl. v. 1. 357.—Class and order, *Dioecia Triandria.* Nat. Ord. *Calyciflorae*, Linn. *Elæagni*, Juss. *Santalaceæ*, Brown.

Ess. Ch. Male, Calyx of three leaves. Corolla none. Stamina inserted into the base of the calyx-leaves.

Female, Calyx of three deciduous leaves. Corolla none. Stigma sessile, three-lobed. Drupa with one seed. Embryo inverted, in the axis of the fleshy albumen.

Akin to EXOCARPUS and OSYRIS. (See those articles.) The genus consists of smooth rushy shrubs, copiously branched, in habit resembling *Osyris*, the principal as well as the ultimate *branches* jointed at their insertion. *Leaves* scattered, sessile, articulated with the branch, narrow, nearly thread-shaped, destitute of *stipulas. Flower-stalks* axillary; the male ones bearing each an umbel of three or four flowers; the female from one to three, jointed in the middle when simple, at the division when branched, and furnished at the joint with two deciduous *bracteas. Flowers* small, yellowish.

1. A. *filifolius.* Slender-leaved Anthobolus. — Leaves thread-shaped, lax, as well as the young branches.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. A. *triqueter.* Awl-leaved Anthobolus.—Leaves awl-shaped, semi-cylindrical, moderately spreading. Branches angular, straight.—Found by sir Joseph Banks and Dr. Solander, in the same country. *Brown.*

ANTHOCERCIS, so named by Labillardiere, from ανθος, *a flower*, and κερκις, *a ray*, the narrow divisions of the corolla spreading in a radiant manner, like the spokes of a wheel.—Labill. Nov. Holl. v. 2. 19. Brown Prodr. Nov. Holl. v. 1. 448. Ait. Hort. Kew. v. 4. 53.—Class and order, *Didynamia Angiospermia.* Nat. Ord. *Luridæ*, Linn. *Solaneæ*, Juss. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, cut half way down into five equal, erect, acute segments, permanent. *Cor.* of one petal, wheel-shaped; tube bell-shaped, contracted at the base, twice as long as the calyx; limb about as long as the tube, in five, sometimes seven or eight, very deep, equal, linear-lanceolate, spreading segments. *Stam.* Filaments four, with the rudiment of a fifth, inserted into the base of the tube, and not above half so long, awl-shaped, simple, smooth; anthers roundish, incumbent. *Pist.* Germen superior, oblong; style cylindrical, the length of the tube; stigma capitate, notched. *Peric.* Capsule ovate-oblong, of two cells and two valves, with inflexed edges, meeting the parallel partition. *Seeds* numerous, small, roundish, reticulated.

Ess. Ch. Calyx five-cleft. Corolla wheel-shaped, regular, with a bell-shaped tube. Stigma capitate. Capsule of two

two cells and two valves, with inflexed edges, and a parallel partition.

A ſhrubby ſmooth genus, whoſe habit announces an affinity to the *Solaneæ*, but whoſe regular, deep-cut, radiating corolla, is altogether ſtrange in the Linnæan claſs *Didynamia*. The *leaves* are alternate, tapering at the baſe, or ſomewhat ſtalked, articulated with the branch, thick, ſometimes dotted with glands. *Flowers* axillary, nearly ſolitary, their *ſtalks* minutely bracteated, and moſtly ſeparating eaſily at the joint. *Corolla* white or yellow, handſome; its tube internally ſtriated; limb in from five to eight ſegments.

1. A. *littorea*. Yellow Anthocercis. Labill. Nov. Holl. v. 2. 19. t. 158. Br. n. 1. Ait. n. 1.—Leaves obovate, without dots, ſmooth at the edges, as well as on both ſides. Young branches ſmooth. Segments of the corolla longer than the tube. Capſule oblong, twice the length of the calyx. —Diſcovered by Labillardiere in Lewin's land; and obſerved in the ſame neighbourhood by Mr. Brown, and Mr. Good. The latter ſent ſeeds to Kew in 1803. This is a greenhouſe plant, flowering during moſt part of the ſummer. Mr. Aiton favoured us with a ſpecimen in May 1811, when it firſt began to produce flowers. Theſe are an inch in diameter, inodorous, pale lemon-coloured; the radiant ſegments of the limb narrow, taper-pointed; the tube ſtriated internally with deep violet. *Leaves* about an inch long, abrupt or emarginate; nearly entire in our ſpecimens. Labillardiere ſays they are ſometimes toothed, or ſerrated.

2. A. *viſcoſa*. Glutinous Anthocercis. Br. n. 2.—"Leaves obovate, marked with glandular dots; roughiſh at the edges; when young finely downy, as well as the young branches. Capſule ovate, about the length of the calyx." —Native of the ſouthern coaſt of New Holland. *Brown*. We have ſeen no ſpecimen of this ſpecies, but from the above account, furniſhed by Mr. Brown, we preſume its *flowers* to be white, and their *limb* not longer than the *tube*.

ANTHODON, a name which ſeems to allude to the toothed *calyx* and *petals*, is applied in the Flora Peruviana, v. 1. 45. t. 74. f. *b*, to a plant referred by profeſſor Vahl to his TONSELLA; ſee that article, ſp. 4th.

ANTHOLOMA. Labill. Voy. Engl. ed. v. 2. 245. t. 41. Nov. Holl. v. 2. 121, is certainly the ſame genus as BASSIA. (See that article.) Whether Labillardiere's plant may be the *obovata* of Forſter, or a new ſpecies, we have no certain means of knowing.

ANTHOTIUM, from ανθος, *a flower*, and ωτιον, *a little ear*, expreſſive of the auricles accompanying the upper ſegments of the corolla.—Brown Prodr. Nov. Holl. v. 1. 582.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Campanaceæ*, Linn. *Campanulaceæ*, Juſſ. *Goodenoviæ*, Brown.

Gen. Ch. *Cal.* Perianth ſuperior, in five deep equal ſegments, permanent. *Cor.* of one petal, longer than the calyx, irregular; tube ſlit at the back from top to bottom, and eaſily ſeparable into five parts, with inflexed edges; limb two-lipped; upper lip in two, lower in three, deep ſegments, thoſe of the upper lip having an ear-like appendage at their inner margin. *Stam.* Filaments five, ſhorter than the tube; anthers cloſely united into a tubular form. *Piſt.* Germen inferior, oblong; ſtyle capillary, the length of the ſtamens; ſtigma large, obtuſe, enveloped in a bivalve beardleſs cover, contrary to the lips of the corolla. *Peric.* Capſule of two cells. *Seeds* ſeveral.

Eſſ. Ch. Corolla of one petal, ſlit longitudinally at the back; limb two-lipped, its upper ſegments auricled at their inner margin. Anthers combined. Stigma with a bivalve beardleſs integument. Capſule inferior, of two cells.

1. A. *humile*. Dwarf Anthotium. Br. n. 1.—Native of the ſouth coaſt of New Holland. A little ſmooth, ſtemleſs *herb*. *Leaves* radical, almoſt cylindrical, ſcarcely dilated at the baſe. *Stalks* ſeveral, ſpreading, undivided. *Flowers* collected in tufts, ſubtended by leafy *bracteas*. *Corolla* approaching to a violet colour. *Pollen* of ſimple grains. There are two varieties, one almoſt twice the ſize of the other, the parts of the *flower* ſomewhat differing alſo in their relative proportion. *Brown*.

ANTHRACITE. See MINERALOGY, *Addenda*.

ANTIARIS, in *Botany*, altered by Leſchenault from the name of the famous Poiſon-tree of Java, *Upas Antiar*, which that botaniſt calls *Antiaris toxicaria*, and which Mr. Brown conſiders as of the ſame genus with what we are about to deſcribe from his excellent General Remarks, Geographical and Syſtematical, on the Botany of Terra Auſtralis, p. 70; publiſhed at the end of the account of captain Flinders's Voyage, 1814.—Claſs and order, *Monoecia Tetrandria*. Nat. Ord. *Scabridæ*, Linn. *Urticæ*, or *Urticeæ*, Juſſ. Brown.

Gen. Ch. Male, *Cal.* Involucrum many-flowered; its margin in numerous, imbricated, lanceolate, acute, fringed, converging ſegments, at length expanded and reflexed; diſk flat, covered with crowded ſeſſile florets: perianth of four nearly ſpatulate, concave, equal, ſpreading leaves, converging at the extremity. *Cor.* none. *Stam.* Filaments ſcarcely any; anthers erect, converging, ovate, obtuſe, two-celled, with white pollen. No rudiments of a piſtil.

Female, *Cal.* Involucrum ſingle-flowered, ovate, ſmall, ſmooth, many-cleft at the ſummit, with lanceolate, fringed, converging, deciduous ſegments, ſome of them ſcattered over the body of the involucrum: perianth none. *Cor.* none. *Stam.* none. *Piſt.* Germen in the body of the involucrum, oblong, ſingle-ſeeded; ſtyle divided almoſt to the bottom, its ſegments thread-ſhaped, parallel, ſmooth, divaricated at the upper part; ſtigmas ſimple, acute. *Peric.* Drupa formed of the enlarged involucrum, oval, ſmooth, the ſize, of a ſmall plum, dark purple, internally fleſhy and yellowiſh, containing a white milk. *Seed.* Nut pendulous, ovate, with a ſmooth, brown, tenacious cruſt; kernel without a ſkin; albumen none; embryo white, of two large, ovate, fleſhy, almond-like cotyledons, flat on the inſide, rather convex externally; radicle ſuperior, very ſhort.

Eſſ. Ch. Male, Involucrum many-flowered, many-cleft. Perianth of four leaves.

Female, Involucrum ſingle-flowered, urceolate, many-cleft at the margin. Perianth none. Style deeply divided. Drupa from the enlarged involucrum. Seed without albumen. Radicle ſuperior.

1. A. *macrophylla*. Brown as above, t. 5.—Found by Mr. Brown, in barren ſtony places, on the ſhores of the Company's iſlands, adjacent to Arnhem's land, on the north coaſt of New Holland, in about 12° ſouth latitude, bearing flowers and ripe fruit in February 1803. A *ſhrub*, or very ſmall *tree*, about ſix feet high, much branched, ſmooth, milky. *Branches* round. *Leaves* alternate, ſtalked, elliptic-oblong with a ſharp point, entire, coriaceous, ſix inches long and three wide; unequal and ſlightly heart-ſhaped at the baſe; dark-green and ſhining above; more verdant beneath; with one rib, and many tranſverſe parallel veins. *Footſtalks* roundiſh, grey, half an inch long. *Stipulas* intrafoliaceous, lanceolate, pointed, folded, leafy. *Flower-ſtalks* axillary, ſolitary, racemoſe, ſcarcely longer than the footſtalks, each bearing ſix or eight alternate *flowers*, of which one or two of the loweſt are female, and earlier than the reſt, which are all male.

We preſume the *A. toxicaria* of Leſchenault, Annales du Muſ. v. 16. 478. t. 22, is another ſpecies of the ſame genus; but

but we are not informed of the fpecific characters of either. Of that celebrated Poifon-tree the firft fatisfactory account, according to Mr. Brown, is there given, which differs from his defcription above, merely in fome particulars relative to the male *flowers*. He adds that *Antiaris* fhould ftand in the *Urticeæ*, between *Brofimum* of Swartz, and *Olmedia* of the Flora Peruviana, agreeing with the latter in the ftructure of its *male flowers*, and more nearly refembling the former in its *female flowers* and *fruit*.

ANTIMONY, in *Chemiftry*. Several important additions have been lately made to our knowledge refpecting this metal and its compounds, which we fhall briefly notice here.

In defcribing this metal, we ftated that Haüy had been unable to afcertain its primitive cryftalline form. This indefatigable obferver has at length, however, determined that the primitive form of its cryftal is an octahedron, and that its integrant particles have the figure of tetrahedrons. The fpecific gravity of antimony, according to Hatchett, is 6.712. It melts at a low red heat, or about 810° of Fahrenheit; and after this, if the heat be raifed, the metal evaporates.

The oxyds of antimony have been lately inveftigated with great care by Thenard, Prouft, Bucholz, and Berzelius. According to Thenard, this metal forms no lefs than fix oxyds; according to Prouft and Bucholz, it forms only two; while according to Berzelius, it forms four. Thefe difcordancies arife from the great difficulty of the inveftigation. The protoxyd of Berzelius is obtained by expofing antimony to the air, or to the action of a galvanic battery. It is a grey powder. When acted upon by muriatic acid, it is feparated into the protoxyd of Prouft and metallic antimony. Hence Dr. Thomfon remarks it is only a mixture of the two. The two oxyds of Prouft are eafily obtained, and poffefs fpecific characters. Berzelius has fhewn that the fecond of them poffeffes the properties of an acid. The peroxyd of Berzelius is alfo readily obtained, though it is difficult to free it from water. This likewife poffeffes the properties of an acid. Hence, fays Dr. Thomfon, we know *three* oxyds of antimony. The *grey protoxyd*, the *white antimonious acid*, and the *ftraw-yellow antimonic acid*.

The following is the compofition of the *protoxyd* of antimony according to

	Prouft.	Berzelius.	Thomfon.
Antimony	100	100	100
Oxygen	22.7	18.6	17.775

Antimonious acid is compofed, according to the fame chemifts, of

Antimony	100	100	100
Oxygen	29.87	24.8	23.7

And *antimonic* acid of

Antimony	—	100	100
Oxygen	—	37.2	35.556

The above refults of Berzelius and Thomfon are rather obtained by calculation than actual experiment, being founded on the fuppofed compofition of fulphuret of antimony, which, according to Berzelius, is compofed of 100 antimony and 37 fulphur, and according to Thomfon, of 100 antimony and only 35.572 fulphur.

While fuch difcordancies exift refpecting the compofition of the oxyds of antimony, it is impoffible to fix with certainty the weight of its atom. Dr. Thomfon, however, it may be proper to ftate, confiders it as 56.25.

The two oxyds of antimony, denominated above the *antimonious* and *antimonic* acids, are capable, according to Berzelius, of combining with different bafes and forming two fets of falts, the firft of which may be termed *antimonites*, the fecond *antimoniates*.

The following is the method of preparing the *antimonium tartarizatum*, or tartrate of antimony and potafh, according to the laft edition of the London Pharmacopœia.

Take fulphuret of antimony pounded, two ounces; nitrate of potafh, one ounce; fupertartrate of potafh, two ounces; fulphuric acid *by weight*, two ounces; diftilled water, a pint and a half. Mix the acid with half a pint of water in a proper glafs veffel, and place it in a fand-bath. When moderately heated add by degrees the fulphuret and nitre previoufly well mixed together; and then apply heat till the whole of the water is driven off. Wafh the remainder with diftilled water until it comes off taftelefs, and while the mafs is yet moift mix it with the fupertartrate of potafh. To this mixture add a pint of diftilled water. Boil the mixture, and when filtered put it afide to cryftallize.

ANTONIUS LIBERALIS, in *Biography*, a Greek writer of an uncertain age, known as the author of Μεταμορφωσεων Συναγωγη, or a Collection of Metamorphofes, publifhed at Bafil, in 8vo., by Xylander, in 1568; at Leyden, in 12mo., by Berkelius, in 1674; by Munkeras, at Amfterdam, in 1676; and by Gale, at Paris, 1675, 8vo. This writer is not the fame with a Latin rhetorician, mentioned by Jerom. Fab. Bib. Græc.

ANYCHIA, in *Botany*, fo called by Michaux, on account of its affinity to PARONYCHIA. (See that article.) This plant therefore has as little concern with the *finger nail*, ονυξ, as the other has with a whitlow.—Michaux Boreal.-Amer. v. 1. 112. Purfh 176. St. Hilaire Paron. 98. (Queria; Gærtn. t. 128.)—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juff. *Paronychiæ*, Juff. Ann. du Muf. St. Hilaire.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, oblong, in five deep, oblong fegments, flightly hooded at the extremity, with a pofterior point. *Cor.* none. *Stam.* Filaments five, fometimes fewer, fhorter than the calyx, oppofite to each fegment and inferted into its bafe, briftle-fhaped, erect, diftinct, without any intermediate proceffes; anthers nearly heart-fhaped. *Peric.* Germen fuperior, roundifh; ftyle one, very fhort; ftigmas two, oblong, recurved. *Peric.* Capfule roundifh, membranous, of one cell and one valve, covered by the calyx, with an orbicular depreffion at the fummit, pointed, feparating at length irregularly at the lower part. *Seed* one, nearly kidney-fhaped, fmooth, attached by a lateral thread to the bafe of the pericarp.

Eff. Ch. Calyx inferior, in five deep, converging fegments, hooded at the fummit. Stigmas two. Capfule membranous, of one valve. Seed folitary.

This is a genus of diminutive herbs, with oppofite *leaves*, attended by *ftipulas*. *Flowers* minute, in leafy tufts, each of them feffile, with *bracteas* like the ftipulas. *Michaux.*

1. A. *dichotoma*. Forked Anychia. Michaux n. 1. Purfh n. 1. (QUERIA *canadenfis*; fee that article, n. 2.)—Stem forked, much branched, fpreading. Leaves elliptic-lanceolate, fmooth, erect. Bracteas about as long as the fmooth calyx.—On dry lime-ftone hills, from New York to Kentucky, flowering from June to Auguft. Perennial. *Flowers* exceedingly fmall: very variable in the number of *ftamens*, generally from two to five. *Purfh*; who quotes Ortega's Dec. t. 15. f. 2. a work not in our poffeffion. The *root* has all the appearance of being annual, as profeffor Schrader found it in the garden of Gottingen.

2. A. *herniarioides*. Rupture-wort Anychia. Michaux n. 2. Purfh n. 2.—"Stem diffufe, denfely branched, downy all over. Leaves elliptic-oblong, fringed, briftle-pointed. Segments of the calyx awl-fhaped, with briftly fpreading points,"

points."—Found by Michaux, on the dry ſands of North Carolina. Perennial. Purſh did not meet with this ſpecies.

3. A. *argyrocoma*. Silvery-headed Anychia. Michaux n. 3. Purſh n. 3.—Procumbent, tufted. Stems minutely downy. Leaves linear, acute, rather hairy. Flowers in terminal tufted heads, with membranous bracteas. Segments of the calyx hairy, with long bearded points.—On rocks in Upper Carolina, and Virginia. Perennial, flowering in June and July. *Purſh*. Michaux compares the habit of this plant to that of *Illecebrum Paronychia*, doubtleſs on account of its large ſilvery *bracteas*.

AORTA, in *Surgery*. As profeſſor Scarpa obſerves, the whole body may be regarded as an anaſtomoſis of veſſels,—a vaſcular circle,—and the remark is ſo true, that even an obliteration of the aorta itſelf may happen, immediately below its arch, without the general circulation of the blood in the body being ſtopped. Meckel met with two caſes in which the aorta was thickened and conſiderably conſtricted juſt below its arch; yet in both ſubjects there was every reaſon to believe, that the abdominal viſcera and lower extremities had been duly ſupplied with blood. This fluid, which could only paſs from the heart with great difficulty, and in ſmall quantities, had, by regurgitating, lacerated the ſemi-lunar valves. (Mém. de l'Acad. Royale de Berlin, 1756, obſ. 17 and 18.) A like example is recorded by Stoerk. Ann. Med. vol. xi. p. 171.

We have a very intereſting caſe of obſtructed aorta related by Monſieur Paris, formerly diſſector for the Amphitheatre of the Hôtel-Dieu. He injected the body of a very lean old woman, about fifty years of age, whoſe arterial ſyſtem was found to be ſingularly deranged, and the circle of the blood altogether changed by a complete contraction of the aorta a little beyond the arch. The attention of M. Paris was particularly excited to the condition of this ſubject by the unaccountable enlargement of the ſmall arteries upon the forepart of the cheſt. The injection which was employed entered the mouth of the aorta ſo readily, that, ſo far was he from ſuſpecting any obliteration of this veſſel, he could have thrown in more injection than is uſually required for filling an adult body. The ſubject was ſo meagre, that, without diſſecting, M. Paris felt the thoracic arteries running down the ſides of the cheſt tortuous and remarkably enlarged. On diſſection, he found the aorta immediately beyond its arch contracted to the ſize of a writing quill; the coats of the artery were of their uſual thickneſs, and its cavity of courſe extremely ſmall; the arch of the aorta above this contraction was but very ſlightly dilated; the part below had loſt nothing of its natural ſize.

The carotids were in the natural ſtate; the arteria innominata and the left ſubclavian were enlarged to twice their natural diameter; all their ſmaller branches were increaſed in the ſame proportion, and had aſſumed a curled and zigzag courſe. The internal mammary and phrenic arteries were greatly enlarged, and very tortuous. The tranſverſe arteries of the neck were of twice their natural ſize; their poſterior branches were tortuous, extending to a great diſtance over the back, with long inoſculations, which were met from below by the branches of the upper intercoſtal arteries, which were alſo remarkably enlarged. The thoracic and ſcapular arteries which run along the ſide of the cheſt were twice their natural ſize.

Below the conſtricted part of the aorta the lower intercoſtals were much enlarged, even to three or four times their natural ſize. Each of them was dilated; but thoſe were moſt affected which were given off neareſt the contracted part; and the poſterior branch of each, which penetrates to the muſcles of the back, was more dilated than that which runs between the ribs. Indeed thoſe poſterior branches were ſo remarkably dilated with contortions ſo cloſely ſucceeding each other, that they reſembled a necklace of beads; and their inoſculations with the branches of the tranſverſalis cervicis were very remarkable. The lower phrenic artery was enlarged, forming conſiderable inoſculations with the ſuperior phrenic. The epigaſtric artery was dilated to the ſize of the enlarged mammary, and was joined with it by very numerous and conſpicuous inoſculations. Deſault's Pariſian Chir. Journ. tom. ii. p. 107, &c.

In the body of a male ſubject, two ſteatomatous tumours were found by Stenzel, ſituated in the ſubſtance of the membranes of the aorta immediately below its arch. Notwithſtanding theſe ſwellings rendered the veſſel nearly impervious, the man had the appearance of ſtrength, and of having been well nouriſhed. "Hæc corpora ferè cor magnitudine æquabant ut omnem propemodum exeunti è ſiniſtri cordis thalamo ſanguini ſpatium præcluderent." Diſſ. de Steatomatibus Aortæ.

Dr. Graham, of Glaſgow, has very recently publiſhed a ſtill more remarkable caſe, in which the circulation was carried on for a conſiderable time through the anaſtomoſes, notwithſtanding a complete obſtruction of a part of the aorta. The patient was a lad fourteen years old, who, in conſequence of expoſure to cold, was affected at firſt with a dry cough, followed by copious expectoration, pain, and difficulty of reſpiration. The diſeaſe was ſuppoſed to be pneumonia in an advanced ſtage. Dyſpnœa, palpitations, and pain of the left ſide, were alſo the moſt remarkable ſymptoms at a later period. The pulſe became weak, but was always regular to the very laſt. The boy at length died, after remaining in the Glaſgow Infirmary about five months. On diſſection, together with other morbid changes, the walls of the left ventricle of the heart were found about an inch in thickneſs; but no other derangement in the ſtructure of the heart, or its valves, was obſerved. The aorta was unuſually expanded near its origin, ſo as to form a kind of pouch; but, after having given off the branches to the head and ſuperior extremities, its diameter was preternaturally contracted. It continued of this diminiſhed ſize till after its union with the canalis arterioſus, when it became *completely impervious*. The coats were not thickened, nor in any way diſeaſed, except that about half an inch below the ſtricture there was a ſmooth elevation on the inner ſurface, leſs raiſed, but having nearly the diameter of a ſplit-pea. In other reſpects, the appearance was exactly ſuch as would reſult from tying a ligature round the artery.

The artery then received three trunks, about as large as crow-quills, and near them three ſmaller ones, when it reſumed its natural ſize along the vertebræ. The three trunks were evidently the uppermoſt of the inferior intercoſtals, the coats of which were remarkably thin, like thoſe of veins. A probe paſſed from the pulmonary artery along the canalis arterioſus to the obſtructed portion of the aorta; but from the thickened appearance of that canal, and the florid countenance of the boy during life, probably there had been little communication allowed by means of it between the aorta and pulmonary artery. Dr. Graham, it appears, did not inject the ſubject, ſo as to demonſtrate all the exact channels by which the circulation had been carried on; but he tells us, that the arteria innominata, the left ſubclavian, the ſuperior intercoſtals, and the mammary arteries, were much enlarged. The epigaſtric was reported to be of its natural ſize. "Theſe facts, and the aorta acquiring at leaſt very nearly its natural ſize immediately below the ſtricture, ſhew that the blood did not paſs to the inferior extremities in any material quantity, as might perhaps have been expected by the inoſculations of the

the mammary and epigaftric arteries; but chiefly by the communications of the fuperior intercoftals and the mammary arteries with the three large branches entering the aorta below the ftricture; and of the mammary and thoracic arteries with the diaphragmatic and other intercoftals. See Medico-Chir. Tranf. vol. v.

If the aorta were obliterated, or obftructed in the abdomen, the blood would find adequate channels for its tranfmiffion in the mammary and epigaftric, the fuperior and inferior mefenteric, and the lumbar arteries. Mr. A. Cooper informs us, that he has never met with any inftance of the latter defcription in the human fubject. (Surgical Effays, part i. p. 113.) But he has feveral times applied ligatures to the aorta in dogs, and found that the blood was readily carried by anaftomofing veffels to the pofterior extremities of the animal. (See Medico-Chir. Tranf. vol. ii. p. 249, &c.) The incifion was in each experiment made on the left fide of the fpine; the aorta was drawn to the furface of the fkin by an aneurifm needle, and being quite feparated from other parts was tied. The animals were then kept for a few weeks, and then killed. They were afterwards injected and diffected, when it appeared that the lumbar arteries were confiderably enlarged, fo as to be the chief agents of the new circulation.

In thofe difeafes caufing obftruction of the thoracic aorta a little beyond its arch, to which we have requefted the reader's attention, no doubt the change was the refult of a very gradual procefs, and confequently, the altered courfe of the blood through the collateral channels would alfo be eftablifhed, not all at once, but by degrees. The anaftomofing arteries would only enlarge, in proportion as the obftruction in the great artery increafed. But in the experiment of tying the aorta in animals things were very different; for the ftoppage of the paffage of the blood through the tied portion of that veffel was not only effected inftantaneoufly, but alfo completely, fo that the whole office of tranfmitting the blood to parts beyond the obftruction fuddenly devolved altogether to the anaftomofes, which had had no time for any gradual and preparatory dilatation. Yet notwithftanding this feeming difadvantage, we find that the blood did pafs into the pofterior extremities.

The aorta of the human fubject, however, has now been tied in the human fubject by Mr. A. Cooper, and the following are a few of the particulars of the cafe. The patient, who was thirty-eight years of age, had on the left fide an inguinal aneurifm, which had actually burft, and difcharged a quantity of blood fufficient to reduce the man to a ftate of confiderable weaknefs. Another hemorrhage would have carried him off. It was apprehended, that the tumour extended too high up to admit of a ligature being applied to the external iliac artery itfelf; yet in the hope of being able to difpenfe with fuch meafures as would be neceffary to tie the aorta near its bifurcation, Mr. A. Cooper refolved to try whether it were poffible to tie the aneurifmal artery itfelf. He made, therefore, a fmall incifion into the aneurifm, about two inches above Poupart's ligament; but he found only a chaos of broken coagula, and that the artery entered the fac above and quitted it below without there being any intervening portion of veffel. The operation was confequently abandoned. "When I was about to withdraw my finger," fays Mr. A. Cooper, "I directed two of the ftudents to comprefs with their hands the aorta upon the fpine, and they fucceeded in ftopping the pulfation in the artery of the right groin. As I withdrew my finger, I put a doffil of lint by its fide, and clofed the opening which I had made into the fac." Surgical Effays, part i. p. 118.

The only other chance of prefervation was what might refult from tying the aorta itfelf; and it was determined to adopt the proceeding, bold and unprecedented as it was in refpect to the human fubject. A doubtful remedy is always better than none. This ancient maxim in furgery feems to gather ftrength in proportion to its duration, and is a fhort but an effectual anfwer to every attempt which has been made by the ignorant and malicious to throw blame on the diftinguifhed furgeon, whofe ardent defire to fave the life of an individual was the main-fpring of his conduct. Mr. A. Cooper, after enjoining the prudence of emptying the bowels previoufly to any other fimilar operation, ftates, that he made an incifion three inches long into the linea alba, giving it a flight curve to the left fide to avoid the umbilicus. One inch and a half of the cut was above and the remainder below the navel. He then made a fmall aperture into the peritoneum, and introduced his finger into the abdomen. This opening was enlarged with a probe-pointed biftoury to nearly the fame extent as that of the external wound. During the progrefs of the operation, only one fmall convolution of inteftine projected beyond the wound. The operator next paffed his finger between the inteftines down to the fpine, where he felt the aorta beating with exceffive force. By means of his finger-nail, he fcratched through the peritoneum on the left fide of the aorta; and next gently and gradually paffing the finger between that veffel and the fpine, again penetrated the peritoneum on the right fide of the aorta. Guided by the fame finger, he now conveyed a blunt aneurifmal needle, armed with a fingle ligature, behind the veffel. After the ligature had been placed, much care was requifite to exclude the inteftine from it in drawing it into a noofe. The operation being finifhed, the wound was clofed with a quill-future and adhefive plafter.

During the operation the fæces paffed off involuntarily, and the pulfe, both immediately and for an hour after the operation, was 144 in a minute. An opiate was given, and the involuntary difcharge of fæces foon ceafed. When the right thigh was touched, the patient thought it was the foot, fo that the fenfibility of that extremity was very imperfect.

The operation had been performed about nine in the evening. At one o'clock the following morning, the lower extremities, which had become cold foon after the operation, were beginning to get warm again, but their fenfibility continued yet indiftinct. At eight o'clock, the right leg was warmer than the left, and the fenfibility was returning. At noon, the temperature of the right limb was 94; that of the left, or aneurifmal limb, $87\frac{1}{2}$. At fix o'clock in the evening, the temperature of the right was 96, that of the left $87\frac{1}{2}$. At nine the fame evening, the pulfe was 104 and feeble, with vomiting, reftleffnefs, and an involuntary difcharge of fæces. At eleven, the pulfe was 100 and feeble, and the vomiting ftill continued. At eight the next morning, the aneurifmal limb appeared livid and felt cold, more particularly around the aneurifm; but the right leg remained warm. At eleven the pulfe was 120, and the patient feemed to be finking. In fact, he died eighteen minutes after one in the afternoon, having furvived the operation forty hours. On diffection, no appearance of peritoneal inflammation was found, except at the edges of the wound. The omentum and inteftines were free from any unnatural colour. The ligature which had not included any portion of bowels was placed round the aorta about three-quarters of an inch above its bifurcation, and about an inch below the part where the duodenum lies acrofs it. In the aorta a coagulum more than an inch in extent was found to have fealed the veffel above the ligature. Below the bifurcation, other fimilar coagula were found in the right and left iliac arteries. By the fall to which the patient had afcribed the

 tumour,

tumour, the neck of the thigh-bone had been broken within the capfule, and it was ftill in a difunited ftate. Mr. A. Cooper imputes the man's death not to inflammation, but to the want of circulation in the aneurifmal limb, occafioned in a great meafure by the immenfe fize of the tumour, and the difturbed ftate of the coagula which it contained. He conceives, therefore, that, in any future cafe of this kind, the ligature fhould be applied before the fwelling has become very large. Surgical Effays, part i.

One thing feems proved by this memorable cafe, *viz.* that the circulation in the lower extremities may continue notwithftanding a fudden ligature on the aorta. Here it did fo in the right leg, and probably would have done fo in the left, had it not been for the obftruction arifing on that fide from the magnitude of the tumour.

AOTUS, in *Botany*, fo named by the writer of this article, from α, *without*, and ὖς, ὠτὸς, *an ear;* becaufe it is effentially diftinguifhed from Pultenæa, (fee that article,) by the want of the two ear-like appendages to its calyx, not to mention other marks hereafter indicated.—Sm. in Sims and Konig's Ann. of Bot. v. 1. 504. Brown in Ait. Hort. Kew. v. 3. 14.—Clafs and order, *Decandria Monogynia.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-fhaped, two-lipped, without appendages; upper lip of two divaricated, acute fegments; lower of three rather longer, more direct ones. *Cor.* papilionaceous, of five petals; ftandard inverfely-heartfhaped, afcending, with a linear claw of its own length; wings obovate-oblong, fhorter than the ftandard, each with an abrupt angle at the upper edge where it joins the claw; keel as long as the wings, obtufe, of two obovate-oblong, afcending petals, each with a fimilar tooth. *Stam.* Filaments ten, feparate, awl-fhaped, afcending, nearly equal, fmooth, deciduous; anthers oval, of two cells. *Pift.* Germen roundifh, with the rudiments of two feeds; ftyle thread-fhaped, parallel to the ftamens, but rather longer, twifted after impregnation, ftigma fimple, bluntifh. *Peric.* Legume nearly orbicular, acute, of one cell and two concave firm valves. *Seeds* two, elliptical, inferted into the middle of the upper margin of each valve, without any creft or appendage.

Eff. Ch. Calyx fimple, five-cleft, two-lipped. Corolla papilionaceous; wings fhorter than the ftandard. Stamens deciduous. Style thread-fhaped. Stigma obtufe. Legume of one cell, and two valves. Seeds two, without a creft.

Aotus is very nearly allied to *Pultenæa*, and had previoufly been confounded therewith, but befides the want of appendages to the *calyx*, and of a *ftrophiolum*, or creft, to the *feeds*, which laft difference was firft noted by Mr. Brown, the *ftyle* is not awl-fhaped, but almoft capillary, varioufly twifted as foon as the flower falls, rather fwelling upwards, and the *ftigma* is obtufe. The habit of the plant is alfo very diftinct, having nothing like the chaffy afpect of a *Pultenæa;* there are neither *bracteas* nor *ftipulas;* the *leaves* are partly oppofite, and almoft whorled. Mr. Brown, by giving a fpecific character to this fhrub in Hort. Kew. leads us to prefume that he has found other fpecies of the fame genus; for he is not one of thofe botanifts who make a *diftinction* without a *difference.* We are however acquainted with the following only.

1. A. *villofa.* Hairy Aotus. Sm. n. 1. Tr. of Linn. Soc. v. 9. 249. Ait. n. 1. Curt. Mag. t. 949. (A. ferruginea; Labill. Nov. Holl. v. 1. 104. t. 132. Pultenæa villofa; Andr. Repof. t. 309, but not of Willd. Sp. Pl. v. 2. 507. P. ericoides; Venten. Malmaif. t. 35.)—Calyx filky, with clofe hairs. Legume ftalked. Seeds rough with minute dots. Leaves rough on the upper fide. *Brown.* —Native of New Holland, and Van Diemen's ifland. Sent by fir J. Banks, in 1790, to Kew garden, where it flowers in the green-houfe, from April to June. The *ftem* is three feet high, with numerous, round, filky, leafy branches. *Leaves* fcattered, or imperfectly whorled, on fhort hairy ftalks, fpreading, linear, revolute, entire, a half or three-quarters of an inch long; channelled, and rough with minute points, above; filky beneath. *Flowers* bright-yellow, axillary, on fhort, filky, rufty ftalks, two or three together, numeroufly crowded about the tops of the branches, fo as to form leafy clufters. *Legume* very hairy, two lines long. The *ftandard* of each flower is marked with radiating crimfon lines, as in the *Dillwyniæ.*

APARGIA, Schreb. Gen. 527. Willd. Sp. Pl. v. 3. 1547. See Thrincia, at the end of which is given the hiftory of this genus.

APERTO, Ital., in *Mufic*, open, oppofed to *chiufo*, clofed.

APHELANDRA, in *Botany*, a genus firft propofed by Mr. Brown, in a note to his Prodromus, to be feparated from Justicia. (See that article.) The name he has given it is compofed of ἀφελης, *fimple*, and ανηρ, *a male*, expreffing the fimple ftructure, or fingle cell, of the anthers, one of the moft diftinguifhing characters of this genus.—Brown Prodr. Nov. Holl. v. 1. 475, obf. Ait. Hort. Kew. v. 4. 55.—Clafs and order, *Didynamia Angiofpermia.* Nat. Ord. *Perfonatæ*, Linn. *Acanthi*, Juff. *Acanthaceæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, oblong, unequal, erect fegments. *Cor.* of one petal, ringent; tube much longer than the calyx, incurved, angular, gradually fwelling upwards; limb in two unequal acute lips; the upper erect, cloven; lower revolute, undivided. *Stam.* Filaments four, awl-fhaped, fimple, erect, inferted into the tube of the corolla, and rather fhorter than its upper lip, parallel, flightly curved, two of them a little the longeft; anthers incumbent, attached by the back, oblong, acute at each end, hairy behind, of one cell. *Pift.* Germen fuperior, ovate; ftyle thread-fhaped, the length of the ftamens; ftigma fimple. *Peric.* Capfule oblong, tapering at the bafe, of two cells and two elaftic compreffed valves, the partition contrary to, and fixed in the middle of, each. *Seeds* two in each cell, roundifh, each fubtended by a fpinous procefs.

Eff. Ch. Calyx in five deep unequal fegments. Corolla ringent; lower lip undivided. Anthers fingle-celled. Capfule of two elaftic valves and two cells; with contrary partitions. Seeds fubtended by fpines.

1. A. *criftata.* Denfe-fpiked Aphelandra. Brown in Ait. n. 1. (Jufticia criftata; Jacq. Hort. Schoenbr. v. 3. 38. t. 320. J. tetragona; Vahl Symb. v. 3. 5. Enum. v. 1. 118. Willd. Sp. Pl. v. 1. 85. Ruellia criftata; Andr. Repof. t. 506.)—Leaves elliptic-oblong, pointed, fmooth on both fides, with hairy veins beneath. Bracteas ovate, entire. Corolla fmooth.—Native of Cayenne and the Caraccas, flowering in the ftove throughout Auguft and September. It appears to have been firft brought to England by the late earl of Seaforth, and flowered at Mr. Lambert's in Wiltfhire. The *ftem* is fhrubby, three feet high, or more, with oppofite, round, fmooth branches. *Leaves* oppofite, ftalked, broadly elliptical, acute at each end, fomewhat wavy, dark green, pliant, five or fix inches long, and three broad; fmooth above, with a reddifh mid-rib, and many fine veins; the rib and veins only, according to Jacquin, downy beneath. *Flowers* fcarlet, large, fplendid, and extremely numerous, forming denfe quadrangular *fpikes*, about a fpan long, branched at the bafe, with clofe, ovate, green, or brownifh, fringed, fingle-flowered *bracteas.* The *corolla*

corolla is full two inches in length. This plant is fo very nearly allied in habit, foliage, colour of the flowers, and their general appearance, to the magnificent *Juſticia coccinea*, Sm. Ic. Pict. t. 8, that one would think they muſt belong to one and the fame genus. But on examination, the three-lobed *lower lip*, two-lobed *anthers*, and leafy *bracteas* of the latter, indicate a technical, as well as natural, diſtinction.

2. A. *pulcherrima*. Downy-leaved Aphelandra. (Juſticia pulcherrima; Jacq. Amer. 6. t. 2. f. 4. Coll. v. 3. (not v. 5.) 252. Ic. Rar. t. 204. Linn. Suppl. 84, *Herb. Linn.* Willd. Sp. Pl. v. 1. 86. Vahl Symb. v. 2. 14. Enum. v. 1. 119. J. arborea; Mill. Dict. ed. 8. n. 7. J. putata; Loefl. It. 244.)—Leaves elliptic-oblong, pointed; fmooth above; finely downy beneath. Bracteas ovate, entire. Corolla fmooth.—Native of South America, flowering in February. *Loefling*. Houſtoun appears to have fent feeds to Miller, who cultivated this fpecies before the year 1733. Mutis communicated a fpecimen to Linnæus, which we fee no reafon to diſtinguiſh from Jacquin's plant, notwithſtanding what is recorded in the *Supplementum*, of the *ſtamens* being two only; for we find four in the flower we have examined, bearing the proper fimple *anthers* of an *Aphelandra*. How far the complete hoary downineſs of the backs of the *leaves*, and the fmaller *ſpikes*, with leſs copious *flowers*, may prove the prefent fpecies diſtinct from the foregoing, we greatly doubt. Mr. Brown in Hort. Kew. unites them, without marking this as even a variety of *criſtata*.

3. A. *ſcabra*. Rough-leaved Aphelandra. (Juſticia fcabra; Vahl Enum. v. 1. 120.)—"Leaves elliptic-oblong, acute; rough on the upper fide. Bracteas oblong, acute, hairy."—Native of South America. *Leaves* three inches long, acute at each end; rough above with prominent points; veins fomewhat downy beneath. Vahl fpeaks of this as very nearly related to the laſt; but as Mr. Brown, who had doubtleſs examined fpecimens, enumerates it in his *Prodromus* as diſtinct, and does not fubfequently unite more than the two firſt together, we prefume it muſt be different, and that the *corolla* is not fmooth, nor the *bracteas* entire, both which characters he makes diſcriminative of the *criſtata*, and they certainly exiſt likewife in the *pulcherrima*.

APHELIA, apparently fo called from ἀφελης, *ſimple*, in allufion to the great fimplicity of parts and ſtructure in the flower.—Brown Prodr. Nov. Holl. v. 1. 251.—Claſs and order, *Monandria Monogynia*. Nat. Ord. *Reſtiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of feveral imbricated, two-ranked, fingle-flowered, pointed, hifpid fcales; the lower ones fometimes barren, and longer than the reſt. *Cor.* of one membranous valve, at the inner fide of each flower. *Stam.* Filament one, capillary; anther fimple. *Piſt.* Germen fuperior, fingle-feeded; ſtyle one, thread-ſhaped; ſtigma folitary, undivided. *Peric.* Capfule membranous, of one valve, and one cell, burſting longitudinally at one fide. *Seed* folitary.

Eff. Ch. Scales two-ranked, fingle-flowered. Corolla of one valve, interior. Anther fimple. Stigma one. Capfule burſting longitudinally, at one fide. Seed folitary.

Obf. This genus is clofely allied to Devauxia of Mr. Brown, which will be defcribed in its proper place hereafter, and from which *Aphelia* differs in having a fimple *piſtil*, two-ranked *ſpike*, and only one valve to the *corolla*, fituated at the inner fide of the flower. The only known fpecies is

1. A. *cyperoides*. Cyperus-fpiked Aphelia.—Difcovered by Mr. Brown, in the fouthern part of New Holland. A fmall, tufted, graffy herb, refembling fome of the leffer kinds of *Scirpus* and *Cyperus*. *Root* fibrous. *Leaves* radical, thread-ſhaped, ſheathing at the bafe. *Stalks* leafleſs, thread-ſhaped, undivided. *Spike* terminal, folitary.

APHRITE. See Schaum *Earth*.

APPARITION. Subjoin at the clofe of the article,

In the year 1805, Dr. Alderfon of Hull read to the literary fociety of that place, and publiſhed in 1811, "An Effay on Apparitions," defigned to prove, that the immediate caufe of thefe fpectral vifitations lies not in the perturbed fpirits of the departed, but in the difeafed organization of the living. In 1813 Dr. Ferrier of Mancheſter publiſhed, on a more extended fcale, "An Effay towards a Theory of Apparitions," fimilar in refult to the anterior production of Dr. Alderfon. Both admit the reality and univerfality of fpectral impreffions, and both attribute them to partial affections of the brain, independent of any fenfible and external agency. Thefe and other fuch writers, who confider the appearances of ghoſts, &c. as the *immediate* effect of certain partial but morbid affections of the brain, confine themfelves to phyfical phenomena, profeffedly difcarding the confideration of any higher efficiency in the feries of caufation, than what appears to be the refult of difeafed organization; fo that their difcovery, though completely overturning the common fuperſtition as to the return of the departed fpirit, or the invifible interference of angelic agency, is yet, fays Dr. Drake, in the learned volume of his "Shakfpeare and his Times," very reconcileable with the pneumatology of biſhop Horfley, who conceives that the Deity often acts immediately through his agents on the human fenfory, as a part of the material univerfe, thereby producing difeafe and morbid impreffions. (See Horfley's Nine Sermons on the Nature of the Evidence by which the Fact of our Lord's Refurrection is eſtabliſhed.) Our Lord, according to the biſhop, after his refurrection, was no longer in a ſtate to be naturally vifible to any man. His body indeed was rifen, but it was become that body which St. Paul defcribes in the 15th chapter of his 1ſt Epiſtle to the Corinthians; which, having no fympathy with the grofs bodies of this earthly fphere, nor any place among them, muſt be indifcernible to human organs, till they ſhall have undergone the fimilar refinement. Accordingly it is alleged, that we are told by St. John, that the body of our Saviour, after his refurrection, could only be feen through the operation of a miracle. "Him God raifed up the third day," and "gave him to be vifible." "Et dedit eum manifeſtum fieri." Vulgate.

APPRECIATION, l. 2. from bottom, *r.* abbé Feytou for Feyter.

APRILE Guiseppe, in *Biography*. See Tenducci.

AQUILEGIA, in *Botany*, (fee our former article). The hiſtory of this elegant genus is greatly enriched by profeffor De Candolle, who reckons up thirteen fpecies. The following references require to be added.—Willd. Sp. Pl. v. 2. 1245. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 325. Sm. Fl. Brit. 578. Prodr. Fl. Græc. Sibth. v. 1. 372. Purſh 372. De Cand. Syſt. v. 1. 333. Tourn. t. 242. Lamarck Dict. v. 1. 149. Illuſtr. t. 488.

Eff. Ch. Calyx none. Petals five, deciduous. Nectaries five, gaping and two-lipped at the fummit; outer lip large and flat; inner minute; each extended downwards into a hollow fpur, callous at the point, projecting between the petals. Stamens numerous, difpofed in five or ten parcels, the inner ones abortive, their filaments dilated, membranous, and oblong, deſtitute of anthers. Germens five. Capfules as many, erect, many-feeded, beaked with the ſtyles. *De Candolle.*

We here, of courfe, alter the phrafeology of our author, with refpect to the parts of the flower, as in Aconitum.

 Thefe

These are perennial herbs, with fibrous *roots*. *Radical*, or lower *ſtem-leaves*, on long three-cleft *footſtalks*, divided in a twice-ternate manner; their *leaflets* three-cleft, toothed, moſtly obtuſe: *upper leaves* cut, or deeply divided, into linear lobes. *Flowers* terminal, blue, white, roſe-coloured, or purple, very rarely of a dirty yellow. To which we may add that the *flowers* are pendulous, *fruit* erect.

The *herbage* is ſlightly bitter, tonic or ſomewhat aſtringent, ſcarcely acrid. *Seeds* acrid, recommended in eruptive diſorders.

The various ſpecies inhabit mountainous thickets and paſtures of the northern hemiſphere; one is found in America, four in different parts of Europe, ſeven in Siberia.

Obſ. The ſcales, originating in the dilatation of the innermoſt *filaments*, and the abortion of their *anthers*, often ſurround the *germens* like *bracteas*, after the *flower* is paſt. They are delineated in ſeveral of Barrelier's plates. Mr. Brown has remarked ſomething analogous in the petal-like ſcales of his Eupomatia; ſee that article hereafter. The flowers in *Aquilegia* become double in four different ways. 1. Thoſe termed *corniculati* have acceſſory *nectaries*, originating from changed *ſtamens*, all ſpurred and pointing downwards. 2. *Inverſi* have their *ſpurs* turned upwards, in conſequence of a twiſt in the claws of thoſe parts. 3. *Stellati* have acceſſory *nectaries* proceeding from enlarged *filaments* deprived of *anthers*; ſuch being all flat, and without *ſpurs*. 4. *Degeneres* have all their *ſtamens*, *piſtils*, and *nectaries* obliterated, nothing remaining but multiplied *petals* (*ſepala* of De Candolle) of a greeniſh hue.

We ſhall follow our author, in a compendious review of the ſpecies, with ſome neceſſary alterations. They are not ſeparated into ſections.

1. A. *vulgaris*. (See Aquilegia, n. 2.) Common Columbine. Linn. Sp. Pl. 752. Willd. n. 2. Fl. Brit. n. 1. Engl. Bot. t. 297. Fl. Dan. t. 695. (Aquilegia; Trag. Hiſt. 137. Fuchſ. Hiſt. 102. A. cærulea; Ger. Em. 1093, with figures likewiſe of the ſeveral varieties above-mentioned. Aquilina; Matth. Valgr. v. 1. 577. Camer. Epit. 404. varieties. 405. Iſopyrum Dioſcoridis; Column. Phytob. 1. t. 1.)—Nectaries incurved. Capſules hairy. Stem leafy, many-flowered. Leaves nearly ſmooth. Styles not overtopping the ſtamens.—Native of rather moiſt meadows, woods and thickets, throughout Europe, from Sweden to Greece, flowering in July. Thunberg alſo found this plant in Japan. Baron Marſchall von Bieberſtein mentions it as occurring, though rarely, in the Iberian tract of Caucaſus. Nothing is more common, or more hardy, in gardens; its fanciful varieties being tolerably conſtant from ſeed, as far as they produce any. The *root* is rather tuberous. *Herb* ſmooth, two or three feet high. *Leaves* glaucous beneath. *Flowers* ſomewhat panicled, pale violet in a natural ſtate, occaſionally pink or white, larger and handſomer than in any of their garden deformities. The *alpina* of Hudſon, different from the real one, is a rather ſmaller, more ſlender, mountain variety, with tapering, leſs incurved, *nectaries*. We have gathered it at Matlock, Derbyſhire.

2. A. *viſcoſa*. (See Aquilegia, n. 1.) Linn. Mant. 77. Willd. n. 1. Ait. n. 1. Gouan Illuſtr. 33. t. 19. "De Cand. Fr. ed. 3. v. 4. 912. v. 5. 640. (A. hirſuta, flore viſcoſo; Magn. Monſp. 26. Hort. 21. A. montana, flore parvo, thalictri folio; Bauh. Pin. 144. Prodr. 75. Lachenal Act. Helvet. v. 8. 146. t. 5. Bauh. Hiſt. v. 3. 484. Moriſ. ſect. 12. t. 1. f. 5, bad.)—Nectaries incurved. Capſules hairy. Stem with very few flowers, almoſt naked, downy and viſcid as well as the leaves and flowers. Styles not overtopping the ſtamens.—Native of Switzerland, the ſouth of France, and all along the rocky hills of the Mediterranean. De Candolle concurs with Villars in opinion, that this plant is only a variety of the foregoing. We have never compared them in a living ſtate, but the ſingular viſcous moiſture which covers the whole herb, eſpecially the *flowers*, and is viſible even in dried ſpecimens, ſeems to indicate an eſſential difference. The *flowers* too are larger, while the plant is ſmaller, ſometimes ſingle-flowered, and the *leaflets*, with their ſegments, are more wedge-ſhaped. Linnæus however declares, Syſt. Veg. ed. 13. 420, that ſeeds of the *viſcoſa*, from Gouan himſelf, produced the *vulgaris*.

3. A. *ſpecioſa*. Handſome-flowered Columbine. De Cand. n. 3, excluding the ſynonyms. (A. vulgaris, daurica; Willd. n. 2, ϑ?)—Nectaries incurved; ſpur the length of the border. Capſules hairy. Stem leafy, many-flowered. Flower-ſtalks, footſtalks, and backs of the leaves, downy. Styles taller than the ſtamens."—Native...... Seen in a cultivated ſtate by De Candolle, flowering in May and June. He doubts whether his plant were diſtinct from *A. vulgaris*, as it differed only in the ſpur and limb of each *nectary* being of equal length, the former generally yellow at the extremity, and the *ſtyles* riſing above the *ſtamens* during the flowering. Fiſcher and Perſoon, it ſeems, have mentioned a variety, in which the *ſpurs* are of the ſame colour as the limb. Whatever their plant may be, we are ſatisfied that the ſynonyms of Aiton and Ehrhart belong to the following.

4. A. *ſibirica*. Siberian Party-coloured Columbine. Lamarck n. 4. De Cand. n. 4. (A. vulgaris, ſpecioſa; Ait. n. 2, δ. Willd. n. 2, η. A. bicolor; Ehrh. Beitr. v. 7. 146. A. hybrida; Sims in Curt. Mag. t. 1221? De Cand. n. 11?)—Nectaries incurved. Germens and capſules perfectly ſmooth. Styles taller than the ſtamens.—Native of Siberia. Linnæus cultivated this plant, and found it did not alter. We received it in 1796, from the garden of Meſſrs. Lee and Kennedy, at Hammerſmith, who had the ſeeds from that country. Specimens of the ſame, in the Linnæan herbarium, are marked as having been gathered near Irkutſk. M. De Candolle juſtly deſcribes "the radical *leaves* on long ſtalks, ſmooth, except perhaps ſome downineſs on the *footſtalks*; their ſegments obtuſe, broadly notched. *Stem* hardly a foot high, moſtly ſingle-flowered, and entirely naked; ſometimes bearing two or three *flowers*, with one or two leafy *bracteas*. *Sepala* (*petals*) blue, oval, obtuſe. *Nectaries* white, half as long, very blunt. *Capſules* quite ſmooth, by which character this ſpecies is readily diſtinguiſhed from all the foregoing, and perhaps from all the reſt." *De Cand.* Our wild ſpecimens have three or four *flowers* on each ſtem, and the garden ones are ſtill more luxuriant. The *flowers* in both are purpliſh-blue, the lips of the *nectaries* cream-coloured, as expreſſed in Ehrhart's name, and Dr. Sims's figure. We ſhould have no heſitation about his ſynonym, were it not for the ſlight downineſs which he attributes to the herbage. The proportion of his *ſtyles* is right, but he does not ſay any thing of the *germens*. We cannot but ſuſpect the gardeners mixed ſeeds of the Siberian ſpecies with the Canada one, or poſſibly that pollen of the latter might have had ſome effect on the flowers of the former, of which the rather leſs curved *nectaries* of the offspring ſeem an indication; the pale hue of their limb is exactly that of our *ſibirica*. The downy *leaves* do not accord with either. If we are right, De Candolle's *hybrida*, n. 11, muſt be expunged. Reſpecting Gmelin's *A.* n. 16, Fl. Sib. v. 4. 185, we ſuppoſe by its laſt ſynonym, alluding to the party-coloured *nectaries*,

nectaries, it muft have been what we have juft defcribed, taken by him for the Linnæan *alpina*, though not without fome doubt.

5. A. *alpina*. (See AQUILEGIA, n. 3.) Alpine Columbine. Linn. Sp. Pl. 752. Willd. n. 3. Ait. n. 3. Ehrh. Beitr. v. 7. 146. Sm. Tour. ed. 2. v. 3. 137. Allion. Pedem. v. 2. 64. t. 66. (A. n. 1196; Hall. Hift. v. 2. 89. A. montana, magno flore; Bauh. Pin. 144. Prodr. 75. Bauh. Hift. v. 3. 484.)—Lips of the nectaries half as long as the elliptic-lanceolate pointed petals; fpurs curved at the extremity. Stem two or three-flowered, leafy. Leaflets with many deep, linear-wedgefhaped, fegments. Capfules downy, corrugated.—Native of bufhy alpine fituations in Switzerland, Savoy, Mount Cenis, &c. flowering in July or Auguft; but not, we believe, of Siberia, the variety β of De Candolle appearing to belong to the laft fpecies. The real *A. alpina* is the moft magnificent of its genus, diftinguifhed by fine blue *flowers*, fpreading two and a half or three inches, and well reprefented in Allioni's plate. The herbage is fmooth. *Stem* often above two feet high, bearing feveral flowers. The *germens* are denfely downy. *Capfules* near an inch long, finely hairy, tranfverfely wrinkled, with copious, prominent, parallel, confluent veins. *Seeds* black and fhining, numerous. Miller might have cultivated this noble plant at Chelfea, but it had long been loft, and was reftored by feeds from Mount Cenis, in 1787, being now probably again extinct in England.

6. A. *pyrenaica*. Pyrenean Columbine. "De Cand. Fr. ed. 3. v. 5. 640." (A. alpina; Lamarck n. 3.)—"Spurs of the nectaries quite ftraight, fcarcely fhorter than the limb. Stem nearly naked, moftly fingle-flowered. Leaflets with numerous, deep, linear lobes."—Found in elevated rocky paftures, among the Pyrenees and Apennines. Akin to the laft, but in all its parts but half as large. *Leaves* on longer ftalks, their outline nearly circular. *Flowers* one or two, middle-fized, blue. *Petals* (*fepala*, De C.) oval, tapering at each end. *Spurs* flender, perfectly ftraight to the very point. *Stem* and *footftalks* either quite fmooth, or flightly hairy. Some fynonyms of *A. vifcofa* are repeated under this fpecies by De Candolle, at leaft thofe of the Bauhins and their followers. We have feen no fpecimen, and can form no opinion. There feems fome confufion in our able friend De Candolle's fpecific characters of this and the laft. The *fpur* in *A. alpina* is half the length of its real *petals*, as Linnæus fays; De Candolle fays half the length of the limb of his *petals*, our *nectaries*, which is not the cafe, thofe parts being of equal length, as is nearly the cafe with *A. pyrenaica*. But in this latter perhaps the *petals*, his *fepala*, are no longer. This point is material.

5. A. *canadenfis*. (See AQUILEGIA, n. 4.) Canadian Columbine. Linn. Sp. Pl. 752. Willd. n. 4. Ait. n. 4. Curt. Mag. t. 246. Purfh n. 1. Bigelow Boft. 133. (A. pumila præcox canadenfis; Cornut. Canad. 59. t. 60. Mill. Ic. t. 47. A. canadenfis, flore externè rubicundo, medio luteo; Morif. fect. 12. t. 2. f. 4.)—Spurs ftraight. Styles and ftamens prominent. Petals acute, rather longer than the limb of the nectaries. Leaflets deeply three-lobed, bluntifh, notched.—In the crevices of rocks, from Canada to Carolina, flowering in April and May. *Purfh*. A hardy perennial in our gardens, diftinguifhed by the beauty of its fcarlet *flowers*, variegated with yellow, remarkable for their long, ftraight, erect *fpurs*. The *germens* are downy, with very long and flender *ftyles*.

8. A. *viridiflora*. (See AQUILEGIA, n. 5.) Green-flowered Columbine. "Pallas Act. Petrop. for 1779. 260. t. 11." Willd. n. 5. Ait. n. 5. Jacq. Ic. Rar. t. 102.—Spurs ftraight, longer than the limb of each nectary. Stamens the length of the nectaries. Styles much longer. Petals elliptic-oblong, fhorter than the nectaries.—Found in Siberia by Pallas, who fent feeds to Kew in 1780. The green *flowers*, and long *fpurs*, mark this fpecies. *Germens* downy, encompaffed by membranous abortive *ftamens*, after the perfect ones are gone.

9. A. *daourica*. Daourian Columbine. De Cand. n. 9.—Spurs ftraight, fhorter than the limb of each nectary, ftamens fcarcely prominent. Styles much longer. Petals acute, fhorter than the nectaries.—On the Daourian mountains, flowering in June. This refembles the preceding and the following fpecies, differing from the former in having dark purple *flowers*, the fpur of whofe *nectaries* is fhorter than their limb, and their *ftamens* a little prominent; from the latter in having very prominent *ftyles*, and *petals* fhorter than the limb of the nectaries. *De Cand.*

10. A. *atro-purpurea*. Dark Violet Columbine. Willd. Enum. 577. De Cand. n. 10. (A. viridiflora β; Willd. n. 5.)—Spurs ftraight, the length of the limb. Styles and ftamens fcarcely equal to the petals, which are the length of the limb of the nectaries.—Native of Siberia, according to Willdenow, from whom this fpecies is entirely adopted. The *flowers* are defcribed as dark purple, or blueifh-violet; the limb of each *nectary* greenifh-blue; fpur blueifh-violet. Profeffor De Candolle fufpects this may be the fame plant as Dr. Sims's *hybrida*, (fee *fibirica*, n. 4.) which is not at all improbable, and if fo, we lofe another out of his thirteen fpecies. The only difficulty is to conceive, that Willdenow could, at any time, reckon this *hybrida* a variety of *viridiflora*, to which his *atro-purpurea* was reduced in his Sp. Pl.

11. A. *parviflora*. Small-flowered Columbine. De Cand. n. 12. (A. fylvarum humilis; Gmel. Sib. v. 4. 186. n. 17. t. 74.)—Spurs ftraight, fhort, nearly as long as the obtufe limb of each nectary. Stamens and piftils recurved, the length of the petals. Stem fmooth, as well as the leaves.—Very frequent in woods about the river Lena. *Gmelin*. *Herb* entirely fmooth, except the briftly *germens*. *Stem* a foot, or rather more, in height, bearing from two to feven *flowers*. *Leaflets* ovate-wedgefhaped, with three broad obtufe teeth at the end. *Bracteas* in linear fegments. *Flowers* blue or violet, much fmaller than thofe of *A. canadenfis*; their *fpurs*, (according to De Candolle, who had examined dried fpecimens,) ftraight, very fhort; Gmelin terms them "fpiral." *Petals* ovate, acute, tapering at the bafe, longer than the blunt limb of the *nectaries*. *Stamens*, as well as *ftyles*, curved downwards; barren *filaments* oblong-linear, much crifped at the edges.

12. A. *anemonoides*. Anemone Columbine. "Willd. Gefl. Naturf. Berl. Mag. for 1811. 401. t. 9. f. 6." De Cand. n. 13.—Spurs ftraight, very fhort, as long as the limb, which is one-third the length of the petals. Stalks radical, fingle-flowered, nearly naked.—Native of the Altaian region of Siberia. *Root* perennial. *Herb* three inches high, fmooth, refembling *Anemone triternata*. *Leaves* radical, divided in a thrice-ternate manner, with oblong fegments, either entire, or two or three-lobed. *Stalk* fcarcely longer than the leaves, accompanied by two linear-lanceolate *bracteas*. *Petals* ovate, obtufe. *Nectaries* five, hooded; their *fpurs* gibbous at the bafe. *Willd.*

ARACÆI, l. 10, *r.* Baanah.

ARACCA, l. 5, *r.* Erach.

ARALIÆ, in *Botany*, fo named from its principal genus, a natural order of plants, the 59th in Juffieu's feries, the 1ft of his 12th clafs. We have given the character of that clafs under the article UMBELLATÆ. The *Araliæ* are thus defined.

Calyx either entire or toothed at the margin. *Petals* and *ftamens* *ſtamens* definite. *Styles* and *ſtigmas* ſeveral. *Fruit* pulpy, or rarely capſular, of as many cells as there are ſtyles, with a ſolitary *ſeed* in each. *Stem* either arboreous, or ſhrubby, or herbaceous. *Leaves* alternate, often compound, their footſtalk ſheathing in its lower part. *Flowers* umbellate, either with an *involucrum*, or, more rarely, naked.

The genera are, *Gaſtonia* of Commerſon; *Polyſcias* of Forſter nearly related thereto; *Aralia* of all authors; *Cuſſonia* of Linnæus in his Supplementum; and *Panax*.

The *Araliæ* are naturally allied to the *Umbellatæ*, but differ in having their ſeeds in a pericarp, inſtead of being naked. They are akin to *Cornus* and *Hedera*, but diſtinguiſhed by having more than one ſtyle. *Juſſ.*

ARANEA, col. 2, l. 10, *dele* which ſee reſpectively, and inſert, See SPIDER.

ARAQUI, in *Geography*, a river of Georgia, next in importance to the Cyrus, or Kur, which, riſing near the gates of Caucaſus, flows to the ſouth, and after dividing into two equal parts, the ſouthern range of mount Caucaſus, falls into the Kur, at the town of Tſgette, 25 miles above Teflis.

ARASCHA, a rapid river of Mingrelia, which has its ſource near the village of Kemme, and unites, on the borders of the Iberian lordſhip of Sa Schilio, with the Hippus, which riſes in the higheſt mountains of the Soani, not far from the ſource of the Phaſis, flows through Letſghumi, divides Mingrelia from Iberia, and enters the Phaſis, near the Tredia.

ARATUM, *v.* ARATRUM.

ARAUCARIA, in *Botany*, a barbarous name, given by Juſſieu to the Chili Pine, which Lamarck, Schreber, and Lambert, have called DOMBEYA. (See that article.) Willdenow has unfortunately retained the above name, becauſe he had already ignorantly followed Cavanilles in calling a genus *Dombeya*, which is not generically diſtinct from *Pentapetes*. Hence *Araucaria* has found its way into Mr. Aiton's Hortus Kewenſis, where Willdenow is taken as the leading authority, and DOMBEY's ill fortune ſtill purſues him. (See our biographical account of that eminent man, which we truſt will be our ſufficient juſtification in always maintaining the genus which he introduced, and which properly belongs to him: nor have we any doubt that our learned countrymen will concur in ſupporting his well-earned fame, when they properly conſider the ſubject.) We have further to obſerve, that the *Dombeya* of Lamarck, or that of Cavanilles, has, neither of them, any preference as to date, both having, we believe, been firſt announced in Juſſieu's Gen. Pl. in 1789, a year before the date of publication of each of thoſe authors' works. We are alſo ready to allow that our illuſtrious friend Juſſieu, in the choice he made, was far from concurring in the baſe perſecution of Dombey, originally raiſed by the Spaniards. He was however evidently aware that the *Dombeya* he adopted could hardly be maintained, or at leaſt that it was not diſtinct from *Pentapetes phœnicea*, now received as PENTAPETES. (See that article.) *Araucaria* is not, as has been reported, the denomination of the Chili Pine, in any part of the world, but a perverſion of that of its native country, the Araucanian mountains, and to ſuch generic names there are many objections.

ARAUJIA, ſo named by profeſſor Brotero, in honour of a Portugueſe nobleman, Don Antonio de Araujo, an eminent patron of botanical ſcience.—Brot. Tr. of Linn. Soc. v. 12. 62.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, ovate, permanent ſegments. *Cor.* of one petal, bell-ſhaped; tube rather longer than the calyx, inflated at the baſe, with five protuberances; limb in five deep, ovate, acute ſegments, ſhorter than the tube, ſlightly ſpreading, their points ſomewhat recurved and twiſted. Nectaries five cells in the baſe of the tube, oppoſite to the ſegments of the limb. *Stam.* Filaments five, inſerted into the baſe of the tube, between the nectaries, ſhort, thick, flattened; anthers arrow-ſhaped, each ſurmounted by a ſmall auricle, converging towards the piſtil; pollen of two obovate maſſes, projected upon five angles of the ſtigma. *Piſt.* Germens two, ſuperior, ovate-oblong; ſtyles two, very ſhort; ſtigma common to both, large, thick, roundiſh-ovate, ſmooth, with two acute points at the top, and five glandular lateral tubercles to receive the pollen. *Peric.* Follicles two, divaricated, large, oblong-oval, coriaceous, ſmooth, abrupt, with a ſmall point, one of them often abortive; partition longitudinal, unconnected when ripe, except at top and bottom, the diſk covered on both ſides with numerous elevated, parallel, ſharply toothed ridges. *Seeds* very numerous, inſerted into the teeth of the receptacle, imbricated downwards, ovate, clothed with papillary pubeſcence, and each crowned with a tuft of long ſilky hairs.

Eſſ. Ch. Corolla bell-ſhaped; tube with five nectariferous cells at the baſe. Anthers crowned with a membrane. Stigma with two horns. Follicles ſmooth. Seeds comoſe.

1. A. *ſericofera*. Silky Araujia.—Native of Peru. Cultivated in the green-houſe at Liſbon, where it flowers in autumn, and ripens ſeed in ſpring. The whole plant abounds with acrid milk, but every part is inodorous. The *root* is creeping. *Stem* ſhrubby, weak, twining, three or four feet high, round, ſmooth, branched, leafy; the young branches rather downy. *Leaves* oppoſite, ſtalked, lanceolate, acute, entire, nearly ſmooth, an inch and a half to three inches long; heart-ſhaped at the baſe, and marked with two glands on the upper ſide, a little above the inſertion of each footſtalk. *Flowers* three or four, or more, together, in ſhort, lateral, drooping, ſmooth, ſomewhat corymboſe *cluſters*, about half the length of the leaves, and inſerted between the baſes of the footſtalks. *Corolla* yellowiſh-white, marked with purple lines; downy about the mouth. *Follicles* three or four inches long.

ARBELA, l. 13, after Arbelitis, add — This place, once the capital of the province of Adiabene, has wholly declined from its former importance, and dwindled into a wretched mud town, with a population not exceeding 3000 ſouls. Part of this town is built on a hill of a conical form, on which probably ſtood the old caſtle, and the remainder of the town encircles the baſe of the hill. The country ſurrounding Erbille, its preſent name, lying in lat. 36° 11′, and between that place and Moſul, is fruitful but hilly, and very deficient in wood, there being hardly a tree or even ſhrub to be ſeen.

ARBITRATION *of Exchange*. See EXCHANGE.

ARCH, l. 4, *fig.* 43; l. 23, *fig.* 43.

ARC *of a Circle*, l. 11, *fig.* 45.

ARCHER, in *Geography*, a townſhip of Ohio, in the county of Jefferſon, containing 60 inhabitants.

ARCHIPELAGO, col. 2, l. 2, *r.* 2100.

ARCTOMYS, in *Zoology*. See MARMOT.

ARCTOTHECA, in *Botany*, a name revived from Vaillant, and originally ſynonymous with ARCTOTIS, (ſee that article,) from which the genus we are about to deſcribe has recently been ſeparated, chiefly by the want of a ſeed-crown; for in habit there is no diſtinction.—"Wendland Hort. Herrenhuſ. 8." Willd. Sp. Pl. v. 3. 2365. Brown in Ait. Hort. Kew. v. 5. 141.—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Gen.

Gen. Ch. *Common Calyx* roundiſh, imbricated; its ſcales elliptic-oblong, woolly; the innermoſt with a dilated, membranous termination. *Cor.* compound, radiated; florets of the diſk numerous, funnel-ſhaped, five-cleft, equal, all perfect; thoſe of the radius about twelve, ligulate, elliptic-lanceolate, longer than the diameter of the diſk, with four ribs, and about three unequal teeth, neuter. *Stam.* in the florets of the diſk only, filaments five, capillary, ſhort; anthers united into a tube, nearly as long as the corolla. *Piſt.* Germen in all the florets, oblong; ſtyle in thoſe of the diſk only, thread-ſhaped; ſtigma prominent, cylindrical, erect. *Peric.* none, except the permanent, dry, curled calyx. *Seeds* in the diſk only, obovate, without wing or down. *Recept.* flattiſh, cellular.

Eſſ. Ch. Receptacle cellular. Seed-down none. Calyx imbricated, partly membranous.

1. A. *repens.* Creeping Arctotheca. Willd. n. 1. Ait. n. 1. (Arctotis repens; Jacq. Hort. Schoenbr. v. 3. 31. t. 306. A. ſcapigera; Thunb. Prodr. 165.)—This, the only known ſpecies, is a native of the Cape of Good Hope. Seeds were ſent by the celebrated Scopoli to the writer of this article, and the plants raiſed from thence flowered in the open ground in Chelſea garden, in the ſummer of 1790, but it was found neceſſary to ſhelter them in winter. The *roots* are perennial, creeping extenſively. *Stems* herbaceous, proſtrate, branched, clothed like the backs of the lyrate pinnatifid *leaves*, with fine white cottony down. *Flower-ſtalks* radical, ſeveral together, ſimple, erect, naked, about ſix inches high, being rather longer than the leaves. *Flowers* ſolitary, an inch and a half broad, lemon-coloured, with purple ribs beneath.

ARCYRIA, a curious genus of the Fungus tribe, thus named, originally by ſir John Hill, from ἀρκυς, *a net*, and ὑριον, *a honeycomb*, the fine net-work of its ripe head having that appearance.—Perſ. Diſp. Meth. Fung. 10. Syn. Fung. 182.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eſſ. Ch. Upper half of the head deciduous. Filaments compoſing a denſe denudated net-work, reſting on the cup-like receptacle.

1. A.? *leucocephala.* White-headed Arcyria. Perſ. n. 1. Hoffm. Germ. v. 2. t. 6. f. 1. Trichia cinerea; Trentepohl in Roth Catal. v. 1. 227.)—Aggregate. Head funnel-ſhaped below, reddiſh-brown. Net-work globoſe, mealy, ſnow-white.—Found on dead leaves or ſticks in autumn. Alſo on moſſes, or fragments of leaves, in rainy weather, very copiouſly, in June and July, according to Albertini and Schweiniz, *Fung. Niſkiens.* 100, who, like Perſoon himſelf heſitate whether to refer this elegant little ſpecies to this genus or to PHYSARUM. See that article.

2. A. *flava.* Yellow Arcyria. Perſ. n. 2. Obſ. Mycol. 1. 58. Diſp. Meth. 10. Albert. and Schw. Niſk. n. 279. (Trichia nutans; Bulliard Fung. v. 1. 122. t. 502. f. 3. Sowerb. Fung. t. 260. Stemonitis amœna; Trentep. in Roth Cat. v. 1. 222.)—Aggregate, yellow. Net-work cylindrical, elongated, drooping.—Found on rotten wood in ſummer, conſiſting of little tufts, of a pale or ochraceous yellow, each plant on a ſhort ſtalk; the *receptacle* hemi-ſpherical; the cylindrical, rather tapering, *net-work* from half an inch to an inch long, reclining, abundant in powdery *ſeeds.*

3. A. *cinerea.* Aſh-coloured Arcyria. Perſ. n. 1. Albert. and Schw. Niſk. n. 280. (A. albida; Perſ. Diſp. Meth. 10. t. 1. f. 2. Trichia cinerea; Bull. Fung. v. 1. 120. t. 477. f. 3. Stemonitis glauca; Trentep. in Roth Cat. v. 1. 221.)—Aggregate, greyiſh-white. Net-work cylindric-ovate, erect. Receptacle crenate.—Found in ſummer, in woods, on dead branches, ſtalks, &c. Smaller and ſhorter, as well as more obtuſe, but with a longer *ſtalk*, in proportion, than the laſt, from which alſo it is diſtinguiſhed by its dirty-white colour. We are puzzled, as well as the learned authors of the *Fungi Niſkienſes*, by Perſoon's aſſertion of the reſemblance of this ſpecies to the fifth, hereafter deſcribed.

4. A. *incarnata.* Fleſh-coloured Arcyria. Perſ. n. 4. Obſ. Mycol. 1. 58. (not 38.) t. 5. f. 4, 5. Albert. and Schw. Niſk. n. 281. (Stemonitis globoſa, et S. carnea; Trentep. in Roth Cat. v. 1. 222.)—Somewhat ſcattered, dull fleſh-coloured. Net-work pyramidal, obtuſe, curved, ſoon deciduous. Empty receptacle ſalver-ſhaped.—Said to be very common in Germany, on oak or fir wood in decay, at all ſeaſons. The empty *receptacles* reſemble little reddiſh *Pezizæ*, and are marked with radiating ſtreaks. The *net-work* appears to abound in farinaceous *ſeeds* of the ſame hue.

5. A. *punicea.* Scarlet Arcyria. Perſ. n. 5. Diſp. Meth. 10. Albert. and Schw. n. 282. (Clathrus denudatus; Linn. Sp. Pl. 1649. Jacq. Miſc. Auſtr. v. 1. 136. t. 6. Trichia cinnabarina; Bull. Fung. v. 1. 121. t. 502. f. 1. T. denudata; Sowerb. Fung. t. 49. T. n. 2164; Hall. Hiſt. v. 3. 115. t. 48. f. 6, as Jacquin has it, rather than t. 4, as cited by Haller himſelf. Stemonitis crocata; Trentep. in Roth Cat. v. 1. 220.)—Crowded, ovate, orange-coloured.—Frequent throughout Europe on rotten wood, in ſummer and autumn. When young it is white and ſoft, but advancing in ſize, it aſſumes a conſpicuous orange-colour, with the dry rather firm texture of its genus. This fine colour chiefly reſides in the copious ſeminal *powder*, for the net-work itſelf is browniſh. The edge of the remaining baſe of the *receptacle* is often irregularly torn, and various in breadth. Bolton's v. 3. t. 93. f. 2, if really taken from this ſpecies, is not a happy repreſentation.

ARDELAN, in *Geography*, a province of the Perſian empire, forming the eaſtern diviſion of Kurdiſtan, is in length 200 miles, from the little river Sharook to the Turkiſh diſtrict of Zohaub, and nearly 160 in breadth. It is ſeparated from the plain of Hamadan by a ſmall range of hills, and its weſtern boundary is 100 miles beyond Senna, the capital, ſituated in N. lat. 35° 12′, and E. long. 40°. The territories of Ardelan extend as far as Kella Shah Khanee, and are peopled by a tribe denominated Gheſhkee, who are recorded by the Kurds as the moſt expert and daring robbers of their nation; nor will torture induce them to betray their accomplices, being habituated to pain and ſevere chaſtiſement from their earlieſt infancy. They are, however, ſlaves to the moſt abject ſuperſtition.

ARGOLASIA, in *Botany*, Juſſ. Gen. 60, a good name, conſtructed by Juſſieu, from ἀργος, *white*, and λασιος, *hairy*, or *ſhaggy*, alluding to the white woolly clothing of the herb. But this name is ſuperſeded by one of ſimilar meaning, LANARIA, (ſee that article,) given to the ſame plant by Dr. Solander, and publiſhed in Ait. Hort. Kew. v. 1. 462, in 1789. This latter has been adopted by Schreber, and is now eſtabliſhed.

ARGUNNA, in *Geography*, a town of Armenia, in the pachalic of Diarbekir, diſtant 48¾ miles from Diarbekir; ſituated on the ſide of a lofty mountain, from which torrents of water are diſcharged in courſes through the ſtreets ſo as to render them impaſſable. The town is populous, but wretchedly built, and is remarkable for the quantity of wine and brandy made in its vicinity.

ARJONA, in *Botany*, ſo named by the late abbé Cavanilles,

nilles, in honour of Mr. Francis Arjona, a celebrated lecturer on botany at Cadiz.—Cavan. Ic. v. 4. 57.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Lyfimachiis*, Juff. affine?

Gen. Ch. *Cal.* Perianth inferior, of two fmall, concave, permanent leaves, each with three terminal teeth. *Cor.* of one petal, funnel-fhaped; tube thrice the length of the calyx, flightly dilated upward; limb in five deep, ovate, acute, equal fegments. *Stam.* Filaments five, capillary, very fhort, inferted into the throat of the tube; anthers oblong, within the tube. *Pift.* Germen fuperior, ovate, crowned with five minute permanent fcales; ftyle fimple, thread-fhaped, the length of the tube; ftigmas two, flat. *Peric.* Berry globofe, crowned with the fcales, of two cells. *Seeds* . . . . .

Eff. Ch. Corolla funnel-fhaped, equal. Berry fuperior, of two cells, crowned with five fcales.

1. A. *tuberofa*. Tuberous Arjona. Cavan. as above, t. 383.—Native of South America, in dry barren ground, near Port Defire, flowering in December. We have a fpecimen from the lamented author, gathered by Louis Née. The long fibres of the *root* are furnifhed, here and there, with oval knobs, well fuited to its arid fituation. *Stem* folitary, a fpan high, with numerous branches from the bottom; nearly fimple above; leafy throughout. *Leaves* very numerous, imbricated, fheathing, awl-fhaped, fpinous-pointed, channelled, entire, rather fpreading, clothed with foft woolly hairs. *Flowers* in a folitary, terminal, denfe, corymbofe head. *Corolla* about an inch long; externally yellowifh and very downy; internally fmooth, yellowifh-white. *Style* reddifh, with fometimes three *ftigmas*. *Berry* fmall, fmooth. *Seeds* not obferved.

There is fomething in the characters and hue of this plant, that approaches the natural order of *Vepreculæ*, or *Thymelææ*, efpecially in the form and afpect of its *corolla*. Poffibly the *fruit* may not really be of two cells. The two cotyledons of a fingle *drupa* might, in an early ftate, miflead the author, who fays he did not fee the *feeds*. The *bark*, however, does not appear to have thofe filky fibres, which are the ftrong indication of the *Daphne* family.

ARISTEA, (fee our former article,) a name left unexplained by profeffor Martyn, is rightly derived by De Theis from *arifta*, an awn, but does not apply as he fays to the point of the leaf. Solander, the author of this name, appears rather to have alluded to the copious bearded fringe of the fheaths, fo remarkable in the original fpecies.—Ker in Ann. of Bot. v. 1. 236. Dryand. in Ait. Hort. Kew. ed. 2. v. 1. 108. Vahl Enum. v. 2. 123.

Eff. Ch. Corolla fuperior, in fix deep regular fegments, fpirally twifted together after flowering, permanent. Capfule of three cells, with many feeds.

Four fpecies having been added to this genus by Mr. Ker, it is neceffary to review the whole.

1. A. *cyanea*. Grafs-leaved Ariftea. Ait. n. 1. Andr. Repof. t. 10.—Flowers in terminal heads. Sheaths and bracteas in many fine capillary marginal fegments.—Native of the Cape of Good Hope, as well as all the following. See ARISTEA, n. 1.

2. A. *capitata*. Talleft Ariftea. Ait. n. 2. Ker in Curt. Mag. t. 605. (A. major; Andr. Repof. t. 160. A. cærulea; Vahl n. 3. Gladiolus capitatus; Linn. Sp. Pl. 53. Moræa cærulea; Thunb. Mor. n. 15. t. 2. f. 2. Prodr. 11. Fl. Cap. v. 1. 277. Willd. Sp. Pl. v. 1. 243.)—Tufts of flowers alternate, racemofe. Sheaths ovate, entire.—Native of mountains in the road to Hautniquas and Lange Kloof, as well as of hills about Cape Town, flowering in October and November, or in the latter fituation, two months earlier. This fpecies is two feet high, with broadifh fword-fhaped *leaves*, and large handfome *flowers*, of a fine blue, compofing a long fafciculated *clufter*.

3. A. *fpiralis*. White Ariftea. Ait. n. 3. Ker in Ann. of Bot. n. 3. (Moræa fpiralis; Linn. Suppl. 99. Willd. Sp. Pl. v. 1. 240. Curt. Mag. t. 520. Thunb. Mor. n. 2. Prodr. 10. Fl. Cap. v. 1. 263.)—Flowers fpiked, in alternate pairs. Segments of the corolla of equal breadth. Sheaths linear-lanceolate, entire.—Native of the Cape, flowering in Auguft. *Stalk* about a foot high. *Leaves* linear-fwordfhaped. *Flowers* large, two inches broad, white with a purple ftar in the centre; the three outermoft fegments brown at the back.

4. A. *melaleuca*. Mourning Ariftea. Ait. n. 4. Ker in Curt. Mag. t. 1277. (Moræa melaleuca; Thunb. Mor. n. 1. t. 1. f. 3. Prodr. 10. Fl. Cap. v. 1. 261. Willd. Sp. Pl. v. 1. 240. Vahl Enum. v. 2. 153. M. lugens; Linn. Suppl. 99.)—Flowers alternate, folitary or in pairs. Three fegments of the corolla not half the fize of the reft. Leaves linear.—Found in feveral fandy bufhy places, at the Cape of Good Hope, flowering in September and October. The *root* is fibrous. *Leaves* numerous, two-ranked, four to fix inches long, and not a quarter of an inch broad. *Flowers* few, fomewhat racemofe, larger than the laft, and very handfome, having three concave, almoft orbicular, fegments, of a fky-blue, an inch and a half long, with three alternate, obovate, black ones, about half as long, and much narrower.

5. A. *pufilla*. Dwarf Ariftea. Ker in Ann. of Bot. n. 5. (Moræa pufilla; Thunb. Mor. n. 4. Prodr. 11. Fl. Cap. v. 1. 265. Willd. Sp. Pl. v. 1. 241. Vahl Enum. v. 2. 154.)—Flower nearly folitary. Three fegments of the corolla narrower than the reft. Stalk two-edged. Leaves fomewhat falcate. Thunberg feems to have forgotten the particular ftations of this fpecies at the Cape. Its *root* is fibrous. *Stalk* three inches high. *Leaves* two-ranked, linear-lanceolate. *Sheaths* entire. *Corolla* blue.

ARISTOLOCHIÆ, fo named from the leading genus, is the twenty-third natural order in Juffieu's fyftem, being the only one in his fifth clafs. That clafs is defined as follows. *Cotyledons* two. *Petals* none. *Stamens* inferted into the piftil. The *Calyx* is fuperior, of one leaf. *Stamens* definite. *Germen* inferior; *ftyle* either wanting, or fingle, or definitely multiplied; *ftigma* fimple or divided. *Fruit* of one or many cells.

The order is thus characterized. *Calyx* fuperior, of one leaf, entire or divided. *Stamens* definite. *Germen* inferior; ftyle one, or nearly wanting; ftigma divided. *Fruit* of many cells, with numerous *feeds*.

The only genera are, *Ariftolochia*, *Afarum*, and *Cytinus*. Linnæus arranged them with his SARMENTACEÆ, but was fubfequently inclined to refer them to his RHOEADEÆ. (See thofe articles.) We have already obferved that they do not belong to the latter, nor have they any relationfhip to the *Sarmentaceæ*, except fomething in the habit and foliage of *Ariftolochia*.

ARKANSAS, in *Geography*, a river of Louifiana, which, next to the Miffouri, is the moft confiderable tributary of the Miffiffippi. Its length is nearly 2500 miles, and at proper feafons it is navigable nearly through the whole diftance. In many places, however, its channel is broad and fhallow, at leaft above the rapids, fo as to render navigation almoft impracticable. Until 800 or 900 miles from its mouth it receives no confiderable ftreams, on account of the vicinity of of the waters of the Miſſouri, of the Kanſas, &c. on the one ſide, and thoſe of Red river on the other. The chief rivers which fall into it are, the Verdigris, the Negracka, Canadian river, Grand river, &c. Several are remarkable for being ſtrongly impregnated with ſalt; the Arkanſas itſelf, at certain ſeaſons, is ſaid to be brackiſh. The lands on this river for 600 or 800 miles upwards are deſcribed as very fine, and capable of affording ſettlements, though principally untimbered. The Arkanſas is a place ſituated 60 miles up the river, and contains 450 inhabitants. It has a few ſtores, and ſeems to be improving. There is a conſiderable trade with the Oſages up the Arkanſas, and with the Indians, who live in the White river country. This is alſo a French eſtabliſhment, and has the ſame proportion of Americans as the other towns. The territory of the Miſſouri contains about 874 Arkanſas, whoſe ſettlements are principally in the neighbourhood of the Arkanſas poſt, or extend up the river; and they are the leaſt conſiderable of the territory. Brackenridge's Views of Louiſiana.

ARMENIA, col. 3, l. 49, add—And the ſouthern, which are poſſeſſed by numerous independent chiefs. At the cloſe of the article Armenia add—The Turkiſh pachalics of Armenia are, Erzeroom, Akiſka, Khars, Bayazid, Mooſh, and Diarbekr. These pachalics are ſubdivided into diſtricts, governed by Vairodes.

ARMENIA, a province of Georgia, which has the Kur to the N.E., the Moſſain or Siſſian hills to the S., and thoſe of the Karagatich to the W. This province has been long celebrated for its mines of gold, ſilver, lead, iron, and copper, as well as for its quarries of marble and jaſper; the principal of which are thoſe of Quoeſch and Tamblutt. It is the beſt peopled and moſt flouriſhing of the provinces of Georgia, and contains many towns. Kinnair's Perſia.

ARNOPOGON, in *Botany*. See TRAGOPOGON at the end.

AROIDEÆ, a very natural order of plants, the ſeventh in Juſſieu's method; being the firſt of his ſecond claſs, of which we have detailed the characters under TYPHÆ.

The *Aroideæ* are thus deſcribed. *Spadix* ſimple, many-flowered, either naked, or involved in a *Spatha*, or Sheath. *Calyx* none, or ſimple. *Stamens* either definite or indefinite, inſerted into the ſpadix. *Germens* originating from the ſame ſpadix, either naked, or encompaſſed with a calyx, in ſome inſtances mixed with the ſtamens, in others ſeparated from them; ſtyles one to each germen, or none at all; ſtigmas as many. *Fruits* as many, of one cell, with one or many *ſeeds*. *Corculum* in the centre of a fleſhy albumen. *Leaves* ſheathing, alternate, for the moſt part all radical. *Spadix* often ſolitary, ſeated either on the top of the ſtem, or more frequently on a radical ſtalk. The *plants* are rarely cauleſcent; ſome of them remarkably irregular in the diſpoſition of their organs of fecundation.

Sect. 1. *Spadix enfolded in a ſpatha.*

Ambroſinia, *Zoſtera*, *Arum*, *Calla*, *Dracontium*, and *Pothos*, all Linnæan genera, with *Houttuynia* of Thunberg.

Sect. 2. *Spadix naked, deſtitute of a ſpatha.*

Orontium and *Acorus*.

It muſt be obſerved, on the authority of Juſſieu himſelf, that the plants of this order are only preſumed to be monocotyledonous, their germination not having been properly examined. The conjecture however is ſupported by Gærtner's figures, the habit of the plants, and the ternary diſpoſition of the parts of fructification in ſome of the genera.

This order is nearly analogous to the *Piperitæ* of Linnæus, except that *Piper* and *Saururus* are included in the latter; a meaſure to which Juſſieu himſelf ſeems inclined.

AROSIS. Add—See TAB.

ARROBA, in *Commerce*, a weight in Portugal and Spain. At Oporto 1 arroba, or arrove, = 32 arratees, and 4 arrobas, or 128 lbs. = 1 quintal. The quintal at the India-houſe is 112 arratees. (See QUINTAL.) In Spain the arroba is alſo a liquid meaſure. A moyo of wine contains 16 arrobas, an arroba = 8 azumbres = 2 quartillos. The arroba of wine, or great arroba, is the ſame all over Spain, regulated by the ſtandard meaſure of Toledo, which contains 34 lbs. of river water (Caſtilian weight), and meaſures $1237\frac{1}{7}$ Spaniſh or 981 Engliſh cubic inches; ſo that 4 ſuch arrobas are = 17 Engliſh wine gallons. The arroba of oil, or leſſer arroba, regulated by the ſame ſtandard meaſure, which weighs 25 lbs. of oil, or 26 lbs. 9 oz. of river water (Caſtilian weight), and meaſures $966\frac{2}{3}$ Spaniſh or 771 Engliſh cubic inches. Hence 3 ſuch arrobas anſwer to 10 Engliſh gallons. The arroba is divided into 4 quartillos, or 100 quarterones or panillas. A Spaniſh botta contains 30 arrobas of wine, or $38\frac{1}{2}$ of oil; a pipe is 27 arrobas of wine, or $34\frac{1}{2}$ of oil; ſo that the botta is = $127\frac{1}{2}$ Engliſh gallons, and the pipe $114\frac{3}{4}$. Kelly's Cambiſt.

ARSKEEN, or AREKIN, a long meaſure in Ruſſia. See VERSHOCK.

VOL. III.

ARTERIES, *Diſeaſes of*. Arteries being compoſed of blood-veſſels, nerves, and abſorbents, are liable to the ſame morbid alterations, and endowed with the ſame powers of reparation, as ſoft parts in general; their coats inflame, and paſs through the different ſtages of adheſion, ſuppuration, or gangrene, in the ſame manner as the ſkin, a gland, or a muſcle.

The internal coat of an artery, Mr. Hodgſon obſerves, bears a ſtriking analogy to ſerous membranes in its tendency to the adheſive inflammation; and this property is in the blood-veſſels, as in all organs, the firſt agent of reparation in injuries from accident or diſeaſe. The inflammation which is excited by the wound or diviſion of an artery produces an effuſion of lymph, which ſeals the extremity of the veſſel, and affecting alſo the external coat becomes the baſis of adheſion and final obliteration. A punctured artery is united by the ſame adheſive proceſs which repairs wounds in general; and if irritation be excited in the coats of an artery by preſſure, adheſive inflammation is the conſequence, lymph is effuſed into the cavity, and into the cellular ſubſtance, connecting the coats of the veſſel; its ſides coaleſce; and it is rendered impervious. The ſame adheſive proceſs frequently prevents hemorrhage, where abſceſſes, or extenſive ulcerations, exiſt in the neighbourhood of large veſſels, the inflammation which precedes the ſuppuration having produced an effuſion of lymph between the coats, and into the cavity of the arteries, whereby it is obliterated. But the moſt perfect demonſtration of the effects of acute inflammation upon the internal coat of an artery, Mr. Hodgſon thinks, is to be met with in the caſes where the diſeaſe appears to have extended to the veſſel from the contiguous parts. Thus, in a fatal inſtance of violent pneumonia, beſides the uſual appearances on diſſection, the inflammation was found to have extended to the aorta, the internal coat of which was of a deep red colour, and a conſiderable effuſion of lymph had taken place into its cavity. The effuſed lymph was very intimately connected with the internal coat of the veſſel, and a plug of it had extended into the left ſubclavian artery, and nearly obliterated the cavity of that veſſel. (Treatiſe on the Diſeaſes of Arteries and Veins, p. 5.) Mr. Hodgſon has obſerved a ſimilar ſtate of the great blood-veſſels in a leſs degree from carditis, pneumonia, and bronchitis.

bronchitis. The granulations, or fungous growths, which are not unfrequently met with at the origin of the aorta upon the semi-lunar valves, or in the cavities of the heart, are said sometimes to originate in the lymph thus effused upon the internal membrane. Mr. Hodgson also assures us, that the inflammation excited in an artery of the extremities by the application of a ligature has been known to extend along the internal coat of the vessel to the heart itself, as we know is often the case with respect to the veins.

According to the same well-informed writer, chronic inflammation may generally be remarked in thickened and calcareous arteries, particularly in aneurismal subjects. The internal coat of the vessel is soft, thickened, of a deep red colour, which is not uniform, but irregularly disposed in the vicinity of ulcerations, thickenings, or calcareous depositions. P. 9.

Ulceration of an artery may commence in the vessel itself, or extend to it from the surrounding parts. In the first circumstance, it is always found first on the internal coat, and is generally preceded by some other morbid change of the vessel. Thus, it is not unfrequently met with around the circumference of calcareous depositions, or upon the surface of atheromatous thickenings; and aneurism is, without doubt, occasionally a consequence of such ulceration, the coats of the vessels being completely destroyed by it, and the blood escaping into the surrounding cellular substance, which becomes gradually expanded into a sac. Hemorrhage is often caused by ulceration extending from surrounding parts to the coats of arteries, as in cancerous and phagedenic ulcers; and Mr. Hodgson even thinks that many passive hemorrhages are produced by ulceration beginning on the inner surface of these vessels.

Sphacelation of arteries in consequence of inflammation of their internal coat has not hitherto been observed. Arteries, however, are often included in extensive sloughing of parts, in which case the blood generally coagulates in the vessels to a considerable extent above the line of sphacelation; an occurrence which seems destined to prevent hemorrhage on the separation of the slough. The coagulum is afterwards absorbed, and the vessel obliterated.

From considering the inflammation of arteries and its effects, our author proceeds to speak of various morbid appearances to which the coats of arteries are liable, in consequence of their peculiar structure and functions.

1. The internal coat of arteries is sometimes thickened and converted into a substance resembling cartilage, or the thickened peritoneum of an old hernial sac. This disease is confined to the internal coat, which having lost its elasticity sometimes cracks, and forms scales that hang into the cavity of the vessel. Calcareous depositions often accompany this alteration of structure, and the surrounding parts of the membrane generally exhibit signs of chronic inflammation. The semi-lunar valves of the aorta are not unfrequently changed into a dense fibrous structure, resembling ligament, or tendon; sometimes they are converted into cartilage, and are manifestly incompetent to their office as valves. In several instances, Mr. Hodgson has found them ruptured, forming cartilaginous eminences on the sides of the vessel.

2. The internal surface of arteries exhibits frequently a thickened and pulpy structure, sometimes with the appearance of small flattened tubercles, and, in other examples, with an irregular and somewhat fleshy appearance over the whole surface. This disease is confined to the internal coat, and is often found in aneurismal subjects.

3. A deposition of atheromatous or purulent matter in the cellular membrane, which connects the internal and middle coats of the vessel. The diseased part is of an opaque yellow colour, sometimes extensive, and considerably elevated above the surrounding surface, and on other occasions circumscribed, and having a pustular or tuberculated appearance. If punctured, matter may be pressed from underneath the internal coat, varying in consistency from that of cheese to that of common pus. Mr. Hodgson has seen the emulgent and femoral arteries in the same subject quite obstructed by the accumulation of this curdy matter.

4. Certain fungous or wart-like excrescences have been observed upon the semi-lunar valves of the aorta and pulmonary artery, and also upon the mitral and bicuspid valves. They are of rare occurrence. Corvisart's opinion respecting the syphilitic nature of their cause is not intitled to any degree of credit; and Mr. Hodgson relates a case, where the absence of that disease throughout the whole of life made it impossible that they could have had such an origin. The femoral artery and commencement of the profunda were in this instance completely obstructed by a fungous growth, similar to what was found upon the semi-lunar valves of the aorta.

5. The next disease to be noticed is a deposition of calcareous matter in the coats of arteries. In old age this happens so frequently, that Bichat was induced to regard it as a natural phenomenon rather than a disease. The incrustation seems to commence in the substance of the internal coat, a delicate pellicle covering the calcareous matter, and separating it from the blood passing through the cavity of the vessel. Sometimes this pellicle is deficient, or hangs into the cavity of the vessel, and the blood is in contact with the incrustation itself. Sometimes all the coats of the vessel are involved in the disease, and are converted into a long cylinder, in which no remnants of the original structure can be traced. (Hodgson, p. 21.) The formation of these depositions bears no resemblance to that of bone; they are seldom, if ever, preceded by the existence of cartilage; and no regular arrangement is discernible in them, corresponding to the fibrous structure of bone. According to Mr. Brande's analysis of them, they contain 65.5 phosphate of lime, and 31.5 animal matter, without any carbonate of lime.

Calcareous matter is frequently deposited in the substance of the semi-lunar valves of the aorta, and produces more serious consequences, than when it takes place in any other part of the arterial system. The valves becoming rigid and fixed diminish the size of the openiug into the aorta. Whilst the pulse at the wrist is feeble, the heart is acting violently to compensate for the diminution in the quantity of blood which should pass through the aorta; and this comparative difference between the pulse at the wrist and that at the heart will, Mr. Hodgson conceives, in advanced cases, be sufficient to enable us to ascertain the existence of this incurable disease. A similar disproportion between the pulse at the heart and at the wrist exists also when the opening between the left auricle and ventricle is contracted; but a double pulsation of the heart has been observed in this case, and is said to distinguish it from contraction of the orifice of the aorta by ossification of its valves.

Mr. Hodgson has given some interesting cases of ossification of the coronary arteries. In one, the heart was unusually small; its parietes soft and flaccid, and upon the ventricles not the eighth of an inch thick; whilst the coronary arteries and many of their ramifications were converted into

into calcareous tubes, and some of them nearly rendered impervious. This morbid appearance does not exist in every case which is attended with the train of symptoms, to which we apply the term angina pectoris. Violent pain in the situation of the heart, extending down the anus, and terminating in a sensation of numbness, palpitation, and irregularity in its action, with frequent syncope and difficult respiration, accompany almost all the organic diseases of that organ. (Hodgson, p. 36.) The deposition of calcareous matter is seldom found in the upper extremities; and although so frequent in the aorta, it has rarely or never been met with in the pulmonary artery, or its valves. See Hodgson on the Diseases of Arteries and Veins, 8vo. London, 1815.

Aneurism, which constitutes the most important disease of arteries, has been treated of in a separate article, to which we have already annexed some additional particulars under the head of SURGERY. A few other observations, relative to the same subject, will be found at the words ANEURISM and AORTA in this *Addenda*.

ARTHONIA, in *Botany*, a genus of the Lichen tribe, thus named by its learned author professor Acharius, in Schrad. Neues Journal, v. 1. fasc. 3. 1. t. 4. "Lichenogr. Univ. 25. t. 1. f. 3, 4." Syn. 4. Sm. Engl. Bot. v. 29. 2079.—Class and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eff. Ch. Receptacles in an uninterrupted crust, shapeless, without a border, smooth, in which the seeds are imbedded.

In habit, the generality of the species which constitute this genus are akin to SPILOMA and OPEGRAPHA. (See those articles.) But Acharius originally included herein the *Lichen croceus*, and *L. saccatus* of Linnæus, which are now separated on account of their totally different habit, and leafy fronds, by the name of *Solorina*, Lichenogr. Univ. 27. t. 1. f. 5, 6; so that *Arthonia* is rendered much more natural. In the *Synopsis* of this writer, his latest publication, twelve species are defined.

Among them are,

A. *Swartziana*, n. 5. Engl. Bot. t. 2079.—Crust thin, membranous, scaly, cream-coloured. Receptacles sessile, black, depressed, roundish, wavy, rather uneven, confluent.—Found on the smooth bark of trees.

A. *astroidea*, n. 7. (Opegrapha astroidea; Ach. Meth. 25. Engl. Bot. t. 1847.)—Crust limited, membranous, smooth, greenish-white, somewhat shining. Receptacles depressed, flat, angular, irregularly starry, black.—Frequent on young trees. We cannot consider this otherwise than as an *Opegrapha*.

A. *obscura*, n. 8. Engl. Bot. t. 1752.—Crust membranous, olive-brown. Receptacles minute, flattish, thin, elliptical or kidney-shaped, sunk, slightly uneven, black.—On the barks of trees, not common, nor very easily to be observed. The *crust* rises into irregular swellings, and the copious *receptacles* are sunk very deep into its substance. The genus of this plant is indeed obscure, nor can we offer any better determination respecting it than that of Acharius.

A. *lyncea*, n. 11. (Lichen lynceus; Engl. Bot. t. 809.)—Crust white, thin, even, somewhat tartareous. Receptacles numerous but distinct, flat, rather sunk, oblong, blunt, often curved, black, with a glaucous tinge.—Found by Mr. Sowerby, nearly covering the rugged barks of old oaks. The *receptacles* resemble a leopard's or lynx's skin, and are not crowded nor confluent, though curved and approaching each other in every direction, the margin of each black. We should rather refer this species to *Opegrapha*.

A. *pruinosa*, n. 12. (Lichen impolitus; Ehrh. Crypt. Achar. Prodr. 56. Engl. Bot. t. 981.)—Crust whitish, thin, somewhat tartareous, unequal, smooth. Receptacles flat, sunk, roundish or angular, confluent, dull orange-brown, with a glaucous tinge.—On the trunks of trees, especially oaks. We cannot but think the original specific name peculiarly happy, and for that reason, if no other, it ought not to have been changed, especially as *pruinosa* is equally suitable to the last species. The present looks of an uniform dirty white, till touched by some hardish body, when the brown *receptacles*, tinged with yellow, become strikingly apparent, and are contrasted with the unaltered *crust*. The figure in *Engl. Bot.* printed in red, is altogether erroneous.

ARTHROPODIUM, named in allusion to the joint in each flower-stalk, by Mr. Brown, from ἄρθρον, *a joint*, and πους, *a foot*, or *support*.—Brown Prodr. Nov. Holl. v. 1. 276. Ait. Hort. Kew. v. 2. 271.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Asphodeli*, Juss. *Asphodeleæ*, Brown.

Gen. Ch. *Cal.* none. *Cor.* of one petal, inferior, in six deep, regular, spreading, deciduous segments; the three innermost waved or fringed at the margin. *Stam.* Filaments six, tapering, densely bearded; anthers roundish, attached by the notch at their base. *Pist.* Germen superior, roundish, with three furrows; style solitary, erect, cylindrical; stigma capitate, hairy. *Peric.* Capsule nearly globular, with three furrows, three cells, and three valves; the partitions from the centre of each valve. *Seeds* few in each cell, somewhat angular, with a naked scar.

Eff. Ch. Corolla in six deep equal segments; three innermost waved or fringed at the margin. Filaments bearded. Capsule nearly globular.

This genus is allowed by its author to come very near *Anthericum*, to which some of the species have been referred by other writers. Indeed we can discover no difference, (three of the *filaments* in *Anthericum*, if not all of them, being bearded,) except the wavy or fringed inner segments of the *corolla*. *Anthericum* being a very extensive genus, whose limits are not well defined, it is highly desirable to lessen the number of species, by establishing new genera from among them, by any certain, however apparently slight, criterion; and it must always be recollected that, in the natural order to which these plants belong, very natural genera are discriminated by apparently rather trivial marks.

Arthropodium is observed by Mr. Brown to consist of smooth herbaceous plants, with fasciculated *roots*, composed either of *bulbs*, occasionally stalked, or of thick fleshy fibres. *Leaves* linear, flaccid. *Clusters* lax. *Flower-stalks* either aggregate or solitary, each with a joint in the middle. *Flowers* pendulous, either purplish or white. *Corolla* closing after flowering, and long before the fruit ripens, falling off, leaving its permanent cup-like withered base behind. The *anthers* are purple, or whitish. THYSANOTUS of our learned friend, already described in our thirty-fifth volume, comes nearer to *Arthropodium* and *Anthericum* than to the *Asparagus* tribe, to which it has been referred; the beautifully fringed inner segments of the *corolla* especially resembling the present genus. But *Thysanotus* has smooth *filaments*, unequal *anthers*, and a declining *style*, with a smaller *stigma*. The *seeds* moreover differ very essentially.

1. A. *paniculatum*. Panicled Arthropodium. Br. n. 1. Ait. n. 1. (Anthericum paniculatum: Andr. Repos. t. 395. A. milleflorum: Redout. Liliac. t. 58.)—Cluster divided; flower-stalks aggregate. Inner segments of the corolla

finely

finely crenate. Capsule pendulous. Bulbs stalked.—Native of the neighbourhood of Port Jackson, New South Wales, from whence we received specimens, near thirty years ago, through the hands of Dr. White. Seeds were communicated by Mr. Geo. Caley to sir J. Banks, for Kew garden, in 1800, and this elegant species is now to be seen in many green-houses, flowering in various summer months. The *root* is perennial. *Stem* erect, round, three or four feet high; slightly leafy in the lower part; much branched and panicled above. *Leaves* linear, pointed, channelled; sheathing at the base, a foot or more in length, chiefly radical. Branches of the *panicle* usually in pairs, spreading, racemose. *Flowers* drooping, three or four together, on undivided partial stalks. *Corolla* reflexed, half an inch in diameter, white variegated with lilac; three outer segments small, acute; three inner ovate, elegantly crisped at the margin. Beard of the *stamens* dense, yellow. *Anthers* and *stigma* purple.

2. A. *strictum*. Upright Arthropodium. Br. n. 2.—"Cluster almost simple, many-flowered; flower-stalks solitary. Capsules erect."—Gathered by Mr. Brown, in Van Diemen's island, but after the flowers were past.

3. A. *minus*. Lesser Arthropodium. Br. n. 3.—"Cluster simple, with few flowers; flower-stalks solitary. Bulbs sessile."—Found by Mr. Brown, near Port Jackson.

4. A. *fimbriatum*. Fringed Arthropodium. Br. n. 4.—"Cluster simple; lower flower-stalks in pairs. Filaments naked in their lower part; tumid and spongy at the top. Anthers linear. Inner segments of the corolla fringed."—Native of the neighbourhood of Port Jackson, where it was noticed by Mr. Brown, who observes that the structure of the *stamens* is so different from the rest, as to make him hesitate whether this species ought not to form a genus by itself. We are not sure whether we are possessed of any specimens.

ARTHROSTYLIS, from αρθρον, *a joint*, and στυλος, *the style*, because of the articulation by which that part is joined to the germen.—Brown Prodr. Nov. Holl. v. 1. 229.—Class and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Brown.

Eff. Ch. Spikelet single-flowered. Glumes chaffy, imbricated; the lower ones empty. No bristles around the germen. Style awl-shaped, triangular, articulated with the germen, deciduous. Stigmas three. Nut triangular.

1. A. *aphylla*. Leafless Arthrostylis. Br. n. 1.—Found by sir Joseph Banks, in that part of New Holland which lies within the tropic. The *stems* are slender, unbranched, without joints or knots; sheathed at the base; naked in the upper part. *Head* terminal, simple, turbinate, longer than its three or four-leaved, awl-shaped *involucrum*. This genus differs from Abildgardia in its habit, and single-flowered *spikelet*; from Rhyncospora in having a deciduous *style*, and no bristles surrounding the base of the *germen*; see those articles. *Brown*.

ARTUSI, l. 4, insert, he.

ARVE, for Rhine *r.* Rhone.

ARUNDINARIA, in *Botany*, inadmissible as a generic name, being formed by an alteration of *Arundo*, already received, is applied by Michaux, Fl. Boreal.-Amer. v. 1. 73, to a genus now called *Miegia*, in Pers. Ench. v. 1. 102, according to Pursh, 59. This cannot, we presume, answer to Schreber's Miegia, (see that article,) as the florets in Michaux's plant are numerous; so that here is some confusion which we must leave the writers in question to settle.

AS, in *Commerce*, a small Dutch weight, used also at Hamburgh, and in Sweden. At Amsterdam, 640 ases are = an ounce, and 8 ounces = a mark troy. (See Mark.) In Sweden the smallest denomination of weight is the as, which is the same as the as of Amsterdam. The mark for weighing gold and silver, called "silsver-marck," is 4384 ases, or 3252 grains English troy weight. Hence 40 such marks are = 271 ounces troy. In apothecaries' weight, the pound is 7416 ases, or 5400 grains troy; and hence 16 such pounds = 15 pounds English troy, or apothecaries' weight.

As, l. 16. 23. 27, for Tullius *r.* Tullus.

ASAM, l. 2, after Bengal, insert—bordering on the country of the Grand Lama, or Bootan;—after Hindostan, or separated from Decca, the N.E. quarter of Bengal, by a range of hills, intersected by the Garrows;—after Meckley, or Ava and Arracan.

L. 16, after journey, add—It is understood to be about 700 miles in length, and its mean breadth above 70, though in some places, where the mountains recede, it greatly exceeds that proportion. Dr. Wade thinks 60,000 square miles a very moderate calculation of its superficial extent, so that it considerably exceeds England and Wales. The whole country is a valley of great fertility, not only divided by the great stream of Burhampooter, but every where intersected by numerous rivers.

ASAPH, St. l. 12, for Shipley *r.* Bagot.

ASCHRAFF. Add—This place is seated on the shore of a bay, which is the only good harbour on the southern side of the Caspian sea.

ASCOBOLUS, in *Botany*, from ασκος, *a skin, or case*, and βολος, *a cast, or throw*, because the seeds are thrown out with elasticity, several together, in oblong cases.—Pers. Syn. Fung. 676. Obs. Mycol. fasc. 1. 33.—Class and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eff. Ch. Receptacle hemispherical, fleshy. Seed-cases prominent, oblong, discharged elastically. Seeds about eight, lodged in moisture.

1. A. *furfuraceus*. Powdery Ascobolus. Pers. Obs. Mycol. fasc. 1. 33. t. 4. f. 3, *a*, and 4, 5, 6. (Peziza stercoraria; Bull. Fung. v. 1. 256. t. 376. Sowerb. Fung. t. 18.)—Crowded, rather concave, olive-brown, externally scurfy.—Common on cow-dung late in autumn. Variable in colour. Bulliard has what he conceives a variety, t. 438. f. 4, in which the disk is pale purple, the outside white.

2. A. *carneus*. Flesh-coloured Ascobolus.—Smooth, flesh-coloured.—Found rarely on dung, in woods. All over of a very pale red.

3. A. *glaber*. Smooth Brown Ascobolus. Pers. Obs. Mycol. fasc. 1. 34. t. 4. f. 3, *b*, and f. 7, *a*, *b*, *c*.—Minute, crowded, smooth, rather convex, of a shining brown.—Common on cow-dung, in autumn. Variable in shape according to its age.

4. A. *immersus*. Sunk Ascobolus. Ibid. 35. t. 4. f. 7, *d*, *e*.—Scattered, immersed, irregular, somewhat conical, rather scurfy externally.—In the same situations, almost entirely sunk in the dung, so that the *seed-cases* only are prominent, containing black *seeds*, floating in an evident fluid. *Persoon*.

ASCOPHORA, from ασκος, *a skin, or bladder*, and φερω, *to bear*. The name originated with Tode, Fung. Mecklenb. fasc. 1. 13, who extended his genus to several species. Persoon restricts it to a solitary species. Pers. Syn. Fung. 685.—Class and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eff. Ch. Thread-shaped, terminating in an empty, slightly inflated, *head*.

1. A. *perennis*. Perennial Bladder-mould. (A. ovalis; Tode Fung. Mecklenb. fasc. 1. 15. Ascidium ovatum; Tode

Tode in Schrift. der Berl. Gesellsch. Naturf. Fr. v. 3. 247. t. 4. f. 4—6.)—Found in autumn, either at the extremities of the branches, or on the trunks, of trees, such as Willows, &c. It may be preserved a long time without decaying, or even shrinking. Tode describes the *head* as at first like a drop of water, but soon assuming an oval figure, shining like silver, and subsequently besprinkled with snow-white powder, probably the *seeds*. This betrays some affinity to STILBUM; see that article.

ASCIDIA, l. *ult.*, *dele* which see respectively, and insert, See VERMES.

ASCONIUS, l. 1, *r.* Pedianus; l. 3, 4, *dele* Quinctilian and.

ASH, in *Geography*, a county of North Carolina, containing 6394 inhabitants, 147 being slaves.

ASHARIANS. See ASCHARIANS.

ASHBURNHAM, l. 4, *r.* 1036.

ASHBY, l. 3, *r.* 1103.

ASHFIELD, l. 4, *r.* 1809.

ASHFORD, a township of America, &c. add—The number of inhabitants by the census in 1810 is 2532.

ASHFORD, *New*, &c. for 460 *r.* 411.

ASHTABELU, a township of the county of Georgia, in the district of Ohio, having 221 inhabitants.

ASHTON, a township of Pennsylvania, in the county of Delaware, having 765 inhabitants.

ASIA, col. 24, l. 31, after height, insert—but by late discoveries and measurements, their altitude has been found to be much more considerable than geographers formerly apprehended and stated. See MOUNTAINS.

ASILUS, l. 16, *dele* which see respectively.

ASIMINA, in *Botany*, a barbarous name, employed by Adanson, and, according to him, of Canadian origin. De Candolle, by his adoption, *Syst. v.* 1. 478, might possibly render it classical, there being no objection on the score of euphony, nor any meaning contrary to reason or sense, as in many other cases of a similar kind. As far as we know, the word is destitute of all meaning whatever; in which respect Michaux's synonym, *Orchidocarpum*, would be preferable, were the idea it conveys unexceptionable, and the word not compounded of another generic name. All things considered, we prefer PORCELIA (see that article hereafter) as entirely free from objection; for we cannot follow our distinguished friend, De Candolle, in separating this last-named genus from his *Asimina*. Our preceding articles ORCHIDOCARPUM and PORCELIA are now superseded, in consequence of more accurate information, chiefly furnished by De Candolle.

ASPARAGI, the 12th natural order in Jussieu's system, the second of his third class; for the full characters of which class, see PALMÆ.

Jussieu thus defines the *Asparagi*, which are nearly equivalent, as we have already observed, to the Linnæan SARMENTACEÆ. See that article.

Calyx in six divisions, regular, usually deeply divided and inferior, rarely superior. *Stamens* six, inserted into the lower part, rarely into the middle, of the calyx. *Germen* simple, mostly superior; styles either three, with as many stigmas, or the style is simple, with a simple or three-cleft stigma. *Fruit* pulpy, rarely capsular, superior, rarely inferior, of three cells, with one, two, or not many more seeds in each. *Corculum* at the scar of the horny albumen.

The *stem* is frequently herbaceous, in some cases shrubby. *Leaves* mostly alternate, seldom opposite or whorled, for the most part not sheathing, but merely clasping the stem. *Flowers* each with a separate sheath; in some instances, perhaps from abortion, dioecious. A third part of the fructification is sometimes, in a few instances, suppressed, or a fourth is added.

Sect. 1. *Flowers perfect. Germen superior.*

Dracæna of Linnæus; *Dianella* of Lamarck; *Ripogonum* of Forster; *Flagellaria* and *Asparagus* of Linnæus; *Callixene* and *Philesia* of Commerson; *Medeola*, *Trillium*, *Paris*, and *Convallaria* of Linnæus and others, constitute this section.

Sect. 2. *Flowers dioecious. Germen superior.*

Ruscus, *Smilax*, and *Dioscorea*.

Sect. 3. *Flowers dioecious. Germen inferior.*

Tamus of Linnæus, (which Jussieu, following Tournefort, calls *Tamnus*,) and *Rajania*.

Mr. Brown, Prodr. Nov. Holl. v. 1, has greatly curtailed this order, referring some of its genera to the *Asphodeli* or *Asphodeleæ*, and establishing out of it a new order, termed *Smilaceæ*, composed of *Trillium*, *Paris*, *Medeola*, (except its Cape species,) *Convallaria*, and *Streptopus*, with his own *Drymophila*, *Ripogonum* of Forster, and *Smilax*. The same author has also founded on the genera of *Dioscorea* and *Rajania* another order called *Dioscoreæ*; but surely *Tamus*, by his own account, connects this with the *Smilaceæ*.

ASPE, for Berne *r.* Bearn; and for Switzerland *r.* France.

ASPER, in *Commerce*. Subjoin—See PIASTRE.

ASPERGILLUS, in *Botany*, a name first applied by Micheli, Nov. Gen. 212. t. 91, to a tribe of minute *Fungi*, and expressive of their resemblance to the form of a sprinkling-brush, used for holy water in Catholic countries. This tribe is now become a section of Persoon's MONILIA. See that article.

ASPERIFOLIÆ, the forty-first of the natural orders of Linnæus, is one of the most natural of these assemblages. It was first pointed out by Cæsalpinus, but obtained the above name from Ray, in allusion to the roughness of the foliage. To this character one or two species of *Cynoglossum* and of *Pulmonaria* alone afford exceptions; which indeed are but partial, for even in these some bristly roughness is almost always to be discovered, either on the surface or margin. This order is analogous to Jussieu's *Borragineæ*, and is so well defined that Linnæus has, contrary to his usual practice, given its characters at some length, as follows.

Root fibrous. *Cotyledons* two. *Stem* with alternate round branches. *Leaves* alternate, simple, for the most part nearly entire, rough with scattered bristly hairs, or callous warts; convolute before they expand. *Stipulas* wanting, as well as all other appendages in general. *Flowers* unilateral; their common stalks, generally in pairs, revolute in a spiral manner, and gradually unrolled as the flowers are ready to open. *Calyx* in five more or less deep divisions. *Corolla* monopetalous, inferior, five-cleft, regular except in *Echium*; its mouth either closed with vaulted valves, or crowned with teeth, or naked and pervious. *Stamens* five, equal, except in *Echium*. *Fruit* superior. *Germens* four, except in some species of *Cynoglossum*, *Tournefortia*, and *Nolana*, to which *Cerinthe* should be added; but *Nolana* was properly removed by Linnæus afterwards to his *Luridæ*; these are inserted into the receptacle by their base; hence the lower part of each *seed* becomes tapering, as if finished artificially. *Pistil* one; style not an elongation of the germens, but sunk between them in the centre, often divided into two equal parts. *Seeds* four, rarely combined into two.

The genera stand thus:

Sect. 1. *Symphytum*, *Onosma*, *Cerinthe*, *Borago*, *Echium*, *Lycopsis*,

Lycopsis, *Asperugo*, *Pulmonaria*, *Lithospermum*, *Cynoglossum*, *Anchusa*, *Myosotis*, and *Heliotropium*.

Sect. 2. *Tournefortia*, *Varronia*, *Ehretia*, *Cordia*, and *Patagonula*.

Sect. 3. *Nolana*, here placed by itself, is now removed.

In the Linnæan manuscript, *Messerschmidia* is introduced between *Echium* and *Lycopsis*; *Coldenia* after *Heliotropium*; *Hydrophyllum* and *Ellisia* after *Tournefortia*; and *Ehretia* is removed to the end of all.

In the generic distinctions of this order, the valves or teeth of the *corolla*, and the more or less deep divisions of the *calyx*, take the lead. Linnæus has been thought by some to have multiplied the genera beyond necessity; yet it is hard to say how they could naturally be abridged. The plants love a dry hilly situation, and become smoother as they approach nearer to water.

The numerical anomaly in the fructification of the *Asperifoliæ*, of the four-cleft fruit, with a five-cleft flower, is one of their striking characters, in which they indeed agree with the Linnæan *Verticillatæ*, Jussieu's *Labiatæ*; but the irregular *corolla*, unequally-divided style, opposite *leaves*, and square *stems*, of the latter, and especially their four *stamens*, two longer and two shorter, clearly distinguish them. Their qualities also greatly differ, being aromatic, not mucilaginous and scentless. Their *flowers* are generally red or purple; those of the *Asperifoliæ* of a beautiful blue, though mostly of as beautiful a red before expansion.

ASPHODELI, the sixteenth natural order in Jussieu's method, the sixth of his third class, thus denominated after *Asphodelus*, one of its well-known genera. Mr. Brown, who has greatly enriched this order with new genera, as well as with removals from the ASPARAGI (see that article), gives it the appellation of *Asphodeleæ*, Prodr. Nov. Holl. v. 1. 274. The characters of Jussieu's third class are detailed under PALMÆ. He thus defines the *Asphodeli*.

Calyx inferior, coloured, often in six deep equal segments; rarely tubular, with six less deep divisions. *Stamens* six, inserted into the bottom or the middle of the calyx. *Germen* superior, simple; style single; stigma either simple or three-cleft. *Capsule* of three cells and three valves, with many *seeds*.

The *root* in a great portion of these plants is bulbous, sending up a leafless *stalk*, and producing capillary fibres from its base downwards; in the rest it is fibrous, bearing a *stem*, for the most part herbaceous. *Leaves* sheathing, alternate, all generally radical. *Spike* often simple, terminating the stalk; sometimes branched, with scaly sheaths under each branch. *Flowers* each accompanied by a sheath, or *spatha*, spiked, (in *Allium* umbellate,) terminal, or rarely axillary.

Sect. 1. *Flowers spiked. Root fibrous. Calyx tubular.*

Aletris and *Aloe* compose this section.

Sect. 2. *Flowers spiked. Root fibrous. Calyx in six deep segments, bearing the stamens at its base.*

Anthericum of Linnæus, comprehended under *Asphodelus* by Tournefort; *Phalangium* of Tournefort, partly comprehended by Linnæus under *Anthericum* (and very improperly named, as *Phalangium* is an established genus of insects); with *Asphodelus*, of Tournefort and Linnæus, constitute this section.

Sect. 3. *Flowers spiked. Root bulbous. Calyx tubular at the base.*

Basilæa of Jussieu, now universally called *Eucomis*; *Hyacinthus* of Tournefort and Linnæus, including *Muscari* of the former; *Phormium* of Forster; and *Massonia* of Thunberg. *Lachenalia* of Jacquin ought also, as Jussieu suspects, to be placed here, being very distinct from *Phormium*, though once confounded with it.

Sect. 4. *Flowers spiked. Root bulbous. Calyx in six deep segments, bearing the stamens at their base.*

Cyanella, *Albuca*, *Scilla*, and *Ornithogalum*.

Sect. 5. *Flowers umbellate. Root bulbous. Calyx in six deep equal segments.*

Allium is here the only genus.

Mr. Brown declares, that he has in vain sought to establish a clear definition of this order, though a truly natural assemblage, whether considered as an order by itself, or as a section of the *Liliaceæ*. (See LILIA.) He has not been able to detect any character common to all the plants, which is not found in several of their near allies, except the black, crustaceous, brittle skin of the *seed*, easily separable from its very thin proper membranous integument. Hence Mr. Brown has been led to place at the end of this family *Hypoxis* and *Curculigo*, as having a similar skin, though their *germen* is inferior: and for the same reason he removes *Blandfordia* from hence, not only on account of the hairy integument of its *seed*, but also because there is a difference in the bursting of its *capsule*, to say nothing of other particulars. The same author notices a joint at the middle or summit of the flower-stalks, frequent in this family, and scarcely observable in the neighbouring orders, except in *Sanseviera*, and some of the *Commelina* tribe. He is decided against separating the pulpy-fruited genera from the rest, either in this order, or the true *Liliaceæ*. It is needless to point out, that what Jussieu and Brown term *calyx* in all these plants, is with Linnæus and his school a *corolla*, and bears the latter appellation in Hort. Kew. The New Holland *Asphodeleæ* are thus arranged by Mr. Brown. *Anthericum*; *Arthropodium*, Br.; *Chlorophytum*, Ker in Curt. Mag.; *Cæsia*, *Tricoryne*, and *Stypandra*, of Brown; *Dianella*, Lamarck; *Cordyline*, Commerson; *Asparagus*; *Eustrephus*, Br.; *Luzuriaga*, Ruiz et Pavon Fl. Peruv.; *Thysanotus*, Br.; *Sowerbæa*, Sm.; *Laxmannia*, Br.; *Borya*, Labill. Nov. Holl.; *Johnsonia*, Br.; and *Xanthorrhæa*, Sm. To which are subjoined genera intermediate between the *Asphodeleæ* and *Amaryllideæ*; *Hypoxis*; *Curculigo*, Gærtn.; and *Campynema*, Labill. With *Astelia*, intermediate between *Asphodeleæ* and *Junceæ*.

ASPIDIUM, a genus of FILICES (see that article), separated from the Linnæan *Polypodium*, on account of its being furnished with an *involucrum*, to each round dot, or mass, of *capsules*, ἀσπίδιον meaning *a small shield*, which is very descriptive of the shape of this involucrum. The propriety of subdividing the original *Polypodium* was doubtfully hinted by the writer of this article, in his Essay on the Genera of Dorsiferous Ferns, and Dr. Swartz adopted this measure. Mr. Brown has carried it still further, by founding his genus NEPHRODIUM; see that article and POLYPODIUM. We need not here repeat our observations, already made in those places. We shall give a general view of *Aspidium*, according to our ideas of this genus.—Swartz in Schrad. Journ. for 1800. v. 2. 29. Syn. Fil. 42. Sm. Fl. Brit. 1118. Willd. Sp. Pl. v. 5. 211. Ait. Hort. Kew. v. 5. 507. Brown Prodr. Nov. Holl. v. 1. 147. Pursh 660. (Nephrodium; Michaux Boreal.-Amer. v. 2. 266. Brown Prodr. Nov. Holl. v. 1. 148.)—Class and order, *Cryptogamia Filices*. Nat. Ord. *Filices*.

Gen. Ch. *Capsules* annulated, numerously assembled in roundish masses, scattered over the back of the frond. *Involucrum* roundish or kidney-shaped, with a lateral sinus, by which it is attached to the frond, at length becoming umbilicated, and more or less orbicular.

Eff.

Eff. Ch. Fructification in roundifh, fcattered, not marginal, dots. Involucrum umbilicated, feparating almoft all round.

Sect. 1. *Frond fimple.* Two fpecies in Swartz; three in Willdenow.

A. *nodofum.* Knotty Shield-fern. Willd. n. 1. (A. articulatum; "Schkuhr Crypt. 28. t. 27, copied from Plumier." Lingua cervina lucida, pediculis articulatis; Plum. Fil. 118. t. 136. Petiv. Fil. t. 10. f. 3.)—Fronds fimple, oblong, wavy, bordered; acute at each end. Dots in interrupted lines. Stalks jointed, fmooth. Root creeping, chaffy and hairy.—Found by Plumier on trees in the forefts of Martinico, no other botanift having, as far as we know, ever met with this fpecies. Willdenow feparates it from the following, which he had examined, chiefly on account of the *fori* being difpofed in chain-like rows, and the *frond* having a thickened margin. Petiver's figure is copied from Plumier, as ufual with the Ferns of that author.

A. *articulatum.* Jointed Shield-fern. Swartz n. 1. Willd. n. 2. (Polypodium articulatum; Lamarck Dict. v. 5. 514.)—Fronds fimple, oblong-lanceolate, finely crenate and wavy, pointed. Dots fcattered, folitary. Stalks jointed, fcaly. Root creeping, chaffy and hairy.—Native of the Mauritius, on trunks of trees. We have one of Commerfon's fpecimens. The *fronds* are a foot long, not thickened at the edges, but very unequally and minutely wavy, as if crenate; the *ftalk* of each not one inch in length, inftead of two, or more, as in the foregoing. *Sori* in a fimple, flightly undulating row, on each fide the mid-rib, not half way between it and the margin, rather fmall. *Involucrum* perfectly peltate, but more or lefs notched at one fide, dark brown; pale and undulated at the circumference. *Capfules* light brown, minute.

Sect. 2. *Frond ternate.* One fpecies in Swartz; four in Willdenow.

A. *trifoliatum.* Three-leaved Variable Shield-fern. Sw. n. 3. Willd. n. 5. Ait. n. 1. "Schkuhr Crypt. t. 28." (Polypodium trifoliatum; Linn. Sp. Pl. 1547. Jacq. Coll. v. 3. 185. Ic. Rar. t. 638. Petiv. Fil. n. 18. t. 7. f. 3. Hemionitis maxima trifolia; Plum. Amer. 22. t. 32. Fil. 127. t. 148. Hemionitidi affinis filix major, trifida, auriculata, pinnis latiffimis finuatis; Sloane Jam. v. 1. 85. t. 42.)

β. Polypodium Pica; Linn. fil. Suppl. 446.

Frond fmooth-edged; either fimple, heart-fhaped at the bafe, and three-lobed; or ternate, partly pinnatifid: the middle lobe or leaflet largeft: lateral ones auricled at the bafe.—Native of groves and fhady places in the Weft Indies. A rather large, very variable fpecies, of a fine grafs-green, thin and pliant; either fimple, in three deep taper-pointed lobes, laterally lobed or auricled, in which ftate it is, as Swartz rightly judged, *Polypodium Pica* of the younger Linnæus; or perfectly and fimply ternate, like Plumier's figure, copied by Petiver, and Pluk. Phyt. t. 291. f. 3; or the leaflets are three-lobed, finuated, occafionally pinnatifid, as in the plates of Jacquin and Sloane. The *fori* are numerous and fcattered. *Involucrum* perfectly peltate, feparating equally all round, without any finus, or notch. The margins of all the fegments or leaflets are fometimes only undulated, but more frequently toothed, in a blunt irregular manner.

A. *cicutarium.* Hemlock Shield-fern. Swartz n. 46. Willd. n. 7. Purfh n. 1. (Polypodium cicutarium; Linn. Sp. Pl. 1549, excluding both the fynonyms of Plukenet, and inferting the following. Filix jamaicenfis, five Polypodium Cicutariæ latifoliæ foetidiffimæ foliis quodammodò conveniens, &c.; Pluk. Almag. 153. t. 289. f. 4.)—Frond ternate: leaflets pinnatifid, pointed, with rounded, obtufe, entire fegments; the lowermoft fegments greatly elongated and fubdivided.—Native of mountains in Jamaica and Virginia. The Linnæan fpecimens came from Dr. Patrick Browne, and anfwer well to Plukenet's t. 289. f. 4, whatever his t. 296. f. 2, cited by authors, may be. The *fronds* are a fpan high, thin, delicate and fmooth, with fine interbranching angular veins. We have feen no fructification. Neither Willdenow nor Purfh appear to have examined any fpecimens.

Sect. 3. *Frond pinnate.* Forty-four fpecies in Swartz; feventy-four in Willdenow.

A. *falcatum.* Sickle-leaved Japanefe Shield-fern. Swartz n. 7. Willd. n. 13. (Polypodium falcatum; Thunb. Jap. 336. t. 36, not 35. Linn. Suppl. 446. Filix cheufanica, latiori lonchitidis ferrato folio, averfâ parte ferrugineis punctulis refertiffimo; Pluk. Amalth. 93. t. 405. f. 1.)—Frond pinnate: leaflets ovate, coriaceous, bluntly ferrated, pointed, curved upwards; oblique and unequal at the bafe; ftrongly veined beneath; the odd one fomewhat three-lobed. Stalk fcaly.—Gathered in Japan by Thunberg, from whom we have a fpecimen. Twelve or fifteen inches high, rigid; rather glaucous beneath. *Involucrum* perfectly peltate and orbicular, with a central bofs. The upper fide of each *leaf* is quite fmooth and even; the under very curioufly reticulated, with ftout, prominent, chain-like veins, meeting, but not ftrictly interbranching with, each other.

A. *punctulatum.* Dotted-bordered Shield-fern. Swartz n. 21. Willd. n. 17. (Lingua cervina dentata, punctulis nigris notata; Plum. Fil. 98. t. 112.)—Frond pinnate: leaflets uniform, linear-lanceolate, pointed, ferrated; with a marginal row of minute impreffions on the upper fide; downy beneath.—Gathered by Plumier in Martinico. We have it from Jamaica. Willdenow moreover mentions Guinea, as the native country of this fpecies. Each *frond* is five or fix feet high. *Common ftalk* round at the back, furrowed in front, light brown, not fmooth, but clothed with fine, foft, narrow, rufty fcales. *Leaflets* very numerous, alternate, four or five inches long and nearly one broad, flightly ftalked, bright green, rather thin and pliant, unequally, and fometimes doubly, ferrated; finely downy at the back; broadly wedge-fhaped, and occafionally flightly auricled at the bafe; their upper fide fmooth, each vein terminating near the margin in a blueifh, withered, minute fpot, the feat, as it appears, of the *flowers;* for a fimilar mark is found over every mafs of *capfules;* but thefe being fituated in a fimple row, at fome diftance from the margin, the fpots which mark their infertion are much further from the edge than the abortive fpots. Plumier reprefents a row of fuch fpots on the *under* fide, at every ferrature. He is fo fupremely accurate, that we have fometimes doubted our plant being the fame as his, of which there is otherwife no appearance. Every thing which may lead to the difcovery of the *flowers* of ferns is fo interefting, that we are here tempted to be more particular than ufual. The maffes of *capfules* are large, prominent, of a bright tawny-brown, each with an almoft perfectly circular and umbilicated *involucrum.* It feems to us a curious queftion, how the fpots above-mentioned which are attended by fertile *capfules*, in large convex *fori*, come to be arrefted at a confiderable diftance from the edge of the leaf, while, without any difference in their fize or appearance, the abortive ones are advanced almoft to the bafe, or even the difk of each ferrature.

A. *Lon-*

A. *Lonchitis.* Rough Alpine Shield-fern. Swartz n. 5. Willd. n. 25. Fl. Brit. n. 1. Engl. Bot. t. 797. (Polypodium Lonchitis; Linn. Sp. Pl. 1548. Fl. Dan. t. 497. Lonchitis aſpera major; Ger. Em. 1140. Matth. Valgr. v. 2. 273. Camer. Epit. 664.)—Frond pinnate, chaffy: leaflets ſickle-ſhaped, declining, acute, with fringe-like ſerratures; auricled at the upper angle of their baſe; wedge-like at the lower.—Native of the crevices of dry rocks in alpine or ſubalpine ſituations, throughout Europe. It has been found in Scotland and Wales, but ſcarcely we believe in England, though ſtarved plants of *A. aculeatum* are occaſionally taken for this ſpecies. The *fronds* are a ſpan high, more or leſs, growing in tufts, erect, lanceolate, rather narrow, or linear. *Leaflets* numerous, crowded, dark greyiſh-green, about an inch long, the upper ones, about one-third of the whole, copiouſly fructifying; the reſt barren; ſeveral of the lowermoſt gradually ſhortened, but not contracted in breadth. *Sori* in a ſimple row on each ſide of the rib, rather nearer to it than to the margin, pale; the *involucrum* of each peltate and umbilicated, without any notch, completely orbicular.

A. *acroſtichoides.* Crowded Shield-fern. Swartz n. 11. Willd. n. 26. Purſh n. 2. ("A. auriculatum; Schkuhr Crypt. 31. t. 30, excluding the ſynonyms." *Willd.* Nephrodium acroſtichoides; Michaux Boreal.-Amer. v. 2. 267. Polypodium fronde pinnatâ lanceolatâ, foliolis lunulatis, &c.; Gron. Virg. ed. 2. 167, excluding all the ſynonyms, except Clayton's.)—Frond pinnate, chaffy: leaflets ſickle-ſhaped, acute, with fringe-like ſerratures; auricled at the upper angle of their baſe: uppermoſt diminiſhed, covered with confluent maſſes of capſules.—Native of rocks, in ſhady low places, from New England to Carolina, bearing capſules in the ſummer. *Purſh.* This fern has long been cultivated in the more curious gardens of England, having been introduced, if we recollect aright, by Robert Barclay, eſq. at Clapham. A taller plant than the laſt, and of a lighter green. The auricle of the lowermoſt *leaflets* ſometimes becomes quite diſtinct and ſeparate. The *ſori* are found upon half, or one-third, of the upper leaflets, in a ſingle or double row, at each ſide of the mid-rib, and are particularly crowded on the auricles. They become tumid as the *capſules* ripen, and run into one maſs, ſtudded, as it were, with the pale-brown *involucrums*, which are circular and peltate, though cloven at one ſide, the edges of the ſinus folding over each other. Linnæus confounded this with *Aſplenium ebeneum*, as well as with his own *Polypodium auriculatum*, an Eaſt Indian ſpecies, hereafter deſcribed.

A. *auriculatum.* Auricled Shield-fern. Swartz n. 10. Willd. n. 30. Ait. n. 3? (Polypodium auriculatum; Linn. Sp. Pl. ed. 1. 1088. ed. 2. 1548. Filix zeylanica, lonchitidis facie; Burm. Zeyl. 98. t. 44. f. 2.)—Frond pinnate: leaflets lanceolate, falcate, ſerrated, ſtriated; auricled at the upper angle of their baſe. Maſſes of capſules diſtinct, in ſimple rows.—Native of the rocky ſummits of mountains in Ceylon. *Kœnig.* Brought to Kew garden, in 1793, by admiral Bligh. *Aiton.* This ſpecies has no affinity or reſemblance to the laſt, with which Linnæus, and after him Swartz, confounded its ſynonyms and character. Even Willdenow, who corrected theſe errors, is miſtaken in ſaying the *ſtalk* is ſmooth. The *frond* is from ſix to twelve inches high. *Stalk* ſcaly in front; roughiſh with minute points behind. *Leaflets* numerous, narrow, an inch and a quarter or an inch and a half long, tapering but not pointed, coriaceous, ſmooth, with fine, blunt, notched, not fringed, ſerratures; even above, ſtriated with tranſverſe veins beneath; dilated at the baſe; the auricle broad, ſhort, and bluntiſh. *Sori* ſmall, diſtinct, in an even row on each ſide the mid-ribs of the *leaflet* and its auricle. We have not ſeen the *involucrum.* The ripe *capſules* are inſerted by fine capillary ſtalks into a convex knob. Linnæus ſays in Fl. Zeyl. n. 383, where he originally defined his *Polypodium auriculatum*, that the plant is entirely ſmooth. The ſhaggineſs and ſlight roughneſs of the *ſtalk* may therefore be variable. He there cites Plukenet, t. 30. f. 4; which is in no reſpect diſcordant with Kœnig's ſpecimens. Mr. Menzies gathered on the weſt coaſt of North America a fern very like this, except that the ſerratures are briſtly, and the leaflets leſs ſtriated. Its ſtalk is very ſcaly all the way up.

A. *exaltatum.* Lofty Shield-fern. Swartz n. 14. Willd. n. 34; excluding the ſynonym of Linnæus. Ait. n. 4. "Schkuhr Crypt. 33. t. 32, b." (Lonchitis glabra minor; Plum. Amer. 19. t. 28. Fil. 48. t. 63. L. altiſſima, pinnis utrinque, ſeu ex utroque latere, auriculatis; Sloane Jam. v. 1. 77. t. 31.)—Frond pinnate: leaflets lanceolate, ſerrated; with a row of minute white impreſſions on the upper ſide, towards the margin; unequally haſtate at the baſe. Maſſes of capſules in a ſimple row, towards the margin. Stalk even, ſlightly ſcaly.—Native of Jamaica, and other parts of the Weſt Indies. Brought to the ſtoves at Kew, by admiral Bligh, in 1793. The *fronds* are uſually three or four feet high, erect, ſtraight, narrow, with a poliſhed, pale-brown ſtalk and mid-rib, occaſionally ſomewhat ſhaggy. *Leaflets* numerous, parallel, cloſe, nearly ſtraight, two inches long at moſt, very ſmooth; rather rounded at the point, their ſhallow, blunt, unfringed ſerratures moſt abundant in their upper half; the baſe dilated into two ſhort broad *auricles*, deſtitute of fructification, of which the lower one is ſhorteſt, and moſt rounded. *Sori* numerous, diſtinct, rather large. *Involucrum* not perfectly orbicular, nor ſtrictly peltate, having a deep ſinus at the ſide towards the baſe of the leaflet, ſo as to reſemble a horſe-ſhoe. This fern is very diſtinct from our *Davallia falcata*, though Dr. Swartz ſuſpected the contrary. Linnæus confounded its ſynonyms with the following. The row of minute withered ſpecks, as far as we can ſee, only accompany the *ſori*, there being, in our ſpecimens, no barren ones as in *A. punctulatum.*

A. *blechnoides.* Long-leaved Shield-fern. (Polypodium exaltatum; Linn. Syſt. Nat. ed. 10. v. 2. 1326. Sp. Pl. ed. 2. 1549; excluding the ſynonyms, and ſubſtituting the following. Filix minor, in pinnas tantùm diviſa, crebras non crenatas, inferiore latere auriculatas, et rotundis pulverulentis areolas averſâ parte notatas; Sloane Jam. v. 1. 86. t. 44. f. 1.) — Frond pinnate: leaflets linear-lanceolate, elongated, entire, with a rounded incurved auricle at the baſe on the lower ſide, and a ſlight dilatation on the upper. Maſſes of capſules in a double row.—Native of Jamaica, on the ſides of hills. Linnæus received his ſpecimen in Browne's herbarium, with an erroneous reference to Sloane's t. 31, which belongs to our laſt-deſcribed. Hence there has always been a confuſion reſpecting theſe two ferns, which even Dr. Swartz could not reconcile; ſee his Syn. Filicum, 65, where he cites Sloane's t. 44, but ought to have added *fig.* 1; as fig. 2. is *Blechnum occidentale.* The ſpecific name of *Polypodium exaltatum*, being taken from Plumier's and Sloane's accounts of the foregoing, and that being univerſally received as *Aſpidium exaltatum*, we have not changed its denomination. That name is not at all applicable to the ſpecies before us, which is more expreſſively called *blechnoides.* Its height is only eighteen or twenty inches. *Leaflets* from four to ſix inches long, taper-pointed; the lower auricle of each overlapping the main ſtalk, and

hooked

hooked or curved in a curious manner, not well expreffed in Sloane's plate. *Sori* in double rows clofe to the mid-rib at each fide. *Involucrum* perfectly peltate, orbicular, and *entire*.

Sect. 4. erroneoufly marked 3 by Willdenow, as is often the cafe in other parts of his work. *Frond pinnate; leaflets pinnatifid. Involucrum rounded, or kidney-fhaped.* Thirty-feven fpecies in Willdenow. Swartz does not feparate this fection from the following.

A. *Hippocrepis.* Horfe-fhoe Shield-fern. Swartz n. 45. Willd. n. 46. (Polypodium Hippocrepis; Jacq. Col. v. 3. 186. Ic. Rar. t. 641. Hemionitis laciniis crifpis incifa; Plum. Fil. 129. t. 150. Petiv. Fil. t. 7. f. 7.)—Frond pinnate: leaflets oblong, finuated; the upper ones confluent and decurrent; lowermoft ftalked, pinnatifid; fegments obtufe, fomewhat crenate; veins downy. Involucrum crefcent-fhaped.—Native of South America, and of Hifpaniola, from whence our fpecimen was brought by M. Thierry de Menonville. Jacquin had living plants of this rare fern from Venezuela, and cultivated it at Vienna. The *fronds* are eighteen inches or two feet high, tufted, of a fine green, more or lefs downy, efpecially about the ribs and veins: their *leaflets* finuated in the manner of fome fpecies of oak; the fegments alfo finuated, wavy, or crifped. *Sori* chiefly ranged on each fide of the mid-ribs of the fegments, but not being uniformly perfected, they appear irregularly fcattered. *Involucrum* like a horfe-fhoe, to which the fpecific name applies.

A. *unitum.* United Shield-fern. Swartz n. 47. Willd. n. 57. Ait. n. 5. Schkuhr Crypt. 34. t. 33, b. (Polypodium unitum; Linn. Sp. Pl. 1548; omitting the fynonyms of Sloane and Plukenet. Filix pyramidalis madrafpatana elegans, pinnulis ferratis; Pet. Muf. 10. n. 55. t. 1. F. zeylanica denticulata, non ramofa; Burm. Zeyl. 98. t. 44. f. 1.)—Frond pinnate: leaflets linear, pinnatifid; their very numerous fegments ovate, acute, combined, hairy beneath. Stalk downy in the leafy part. Involucrum nearly circular, with a deep notch.—Native of Tranquebar and Ceylon. *Frond* two feet, or more, in height: fmooth and nearly naked in its lower half, except a few diftant fmall leaflets: finely downy and rufty in the upper half, and crowded with feffile, narrow, acute, linear *leaflets* from three to five inches long. Thefe are compofed of innumerable little convex fegments, a quarter of an inch in length; fmooth and veiny above; ribbed and downy beneath; appearing as if deeply feparated, but their edges are firmly united for one-half or three-quarters of their length. Near the margins of thefe fegments are fimple rows of fmooth horfe-fhoe like *involucrums*, covering numerous *capfules* with glittering brown rings.

A. *obtufatum.* Blunted Shield-fern. Swartz n. 30. defcr. 248. Willd. n. 58. (Pteris interrupta; Willd. Phytogr. 13. t. 10. f. 1.)—Frond pinnate: leaflets linear, pointed, flightly pinnatifid; fegments obtufe, downy beneath. Stalk fmooth. Fructification near the margin.—Native of the Eaft Indies. Very like the laft, but the *leaflets* are more pointed, rather crenate than pinnatifid, and the rows of *fori* fo near the margin that Willdenow actually took the plant for a *Pteris!*

A. *Oreopteris.* Heath Shield-fern. Swartz n. 39. Willd. n. 70. Fl. Brit. n. 3. Engl. Bot. t. 1019. "Schkuhr Crypt. 37. t. 35, 36." (Polypodium Oreopteris; Ehrh. Crypt. n. 22. Dickf. Tr. of Linn. Soc. v. 1. 181. Fl. Dan. t. 1121. P. Thelypteris; Hudf. 457. Bolt. Fil. 40. t. 22. f. 1, 2. Hedw. Theor. 44. t. 6.)—Frond pinnate: leaflets lanceolate, pinnatifid, entire, befprinkled with refinous glands beneath. Fructification near the margin, confluent.—Mountainous heathy ground, and dry woods, in various parts of Europe, from Denmark to Italy, produce this fern, bearing capfules in July. Our Britifh botanifts long overlooked it, as a variety of the common *Filix mas*, whilft others miftook it for *Thelypteris*. The refinous dots at the back of the *frond* exhale a fragrant fmell, more or lefs perceptible at different times; which induces a fufpicion that this fpecies may have been taken by Mr. Hudfon for *Polypodium fragrans* of Linnæus, never found in our ifland. In fize the prefent fpecies vies with *A. Filix mas*, hereafter to be defcribed, but the whole *frond* is rather narrower. The fegments of the *leaflets* ufually quite entire, are occafionally fomewhat crenate about their rounded obtufe points. *Sori* crowded, in a fimple row near the margin, at length confluent, forming a beaded line. *Involucrum* fmall and thin, umbilicated, with a deep lateral finus, and foon vanifhing. *Root* large, fcaly, tufted, not creeping.

A. *Thelypteris.* Marfh Shield-fern. Swartz n. 39. Willd. n. 74. Fl. Brit. n. 2. Engl. Bot. t. 1018. Purfh n. 4. "Schkuhr Crypt. 51. t. 52." (Polypodium Thelypteris; Linn. Mant. 505. Fl. Dan. t. 760. Acroftichum Thelypteris; Linn. Sp. Pl. 1528. Bolt. Fil. 78. t. 43, 44. Thelipteris non ramofa; Schmidel Ic. t. 11. Filix tenuiffimè et profundè denticulata Montbelgardica; Bauh. Hift. v. 3. 731, good. F. paluftris repens, pinnulis non dentatis; Morif. fect. 14. t. 4. f. 17, 1.)—Frond pinnate: leaflets lanceolate, pinnatifid, fomewhat crenate; diftinct, but croffing each other, at the bafe. Fructification fcattered, confluent. Root thread-fhaped, creeping.—Native of rotten bogs, and turfy marfhes on a fandy foil, in various parts of the north of Europe, as well as in North America. Mr. Purfh fays the fructification is very rare in the latter country: with us it is but fparingly produced, the plant increafing moft by the *roots*, which are long, flender, and creeping. The *fronds* are not half the fize of the laft, and much more delicate; their height about a foot, their colour bright grafs-green. *Leaflets* generally fmooth; fometimes a little hairy; the loweft lobe of each extended, fo as to fold over the oppofite one. *Fructification*, if prefent, abundant, confluent, blackifh.

A. *criftatum.* Leffer Crefted Shield-fern. Swartz n. 49. Willd. n. 79. Sm. Compend. Fl. Brit. 157. Engl. Bot. t. 2125, not 1949. Purfh n. 5. "Schkuhr Crypt. 39. t. 37." (Polypodium criftatum; Linn. Sp. Pl. 1551. Afzel. in Stockh. Tranf. for 1787. 248. t. 9. P. Callipteris; Ehrh. Crypt. n. 53.)—Frond pinnate, nearly bipinnate: fegments ovate, obtufe, crenate or pinnatifid, with fharp little terminal teeth. Stalk fcaly at the bafe. Involucrum nearly orbicular, with a deep notch.—Native of Sweden, Germany, and England, as well as North America, in low boggy woods and thickets. Found by the Rev. R. B. Francis, on the heath between Holt and Hempftead, Norfolk. The *root* is tufted, as in *A. Oreopteris*, not creeping like that of *Thelypteris*, and the whole habit and texture of the fern more refembles the firft of thefe two fpecies. *Fronds* pale green, from one to two feet high; the fertile ones remarkably erect; their barren *leaflets* fhorter and rather more diftant, than thofe which bear fructification, the latter compofing the upper half of the frond; all are very deeply pinnatifid, fometimes to the very rib, their fegments, or partial leaflets, clofe, broad, obtufe, with fharp, fcarcely fpinous, teeth. *Ribs* fomewhat zigzag. *Capfules* blackifh when frefh, with a white circular *involucrum* to each affemblage, having a deep finus at the lower fide; but the dried

dried *ſori* are tawny. *Common ſtalk* of the *frond* chiefly ſcaly at the bottom. Mr. Purſh conſiders Willdenow's *lancaſtrienſe*, n. 97, as a variety of this.

A. *fragrans.* Fragrant Shield-fern. Swartz n. 42. Willd. n. 80. (Polypodium fragrans; Linn. Sp. Pl. 1550. Dryopteris rubum idæum ſpirans; Amman. Ruth. 174. n. 251.)—Frond pinnate: leaflets lanceolate, crowded, deeply pinnatifid; ſegments elliptic-oblong, bluntly and deeply toothed; ſtalks and mid-ribs ſcaly. Fructification crowded. Involucrum nearly orbicular, with a deep notch.—Native of hilly ſituations in Siberia, near the rivers Angara and Selenga. The inhabitants are ſaid to boil this fern with their beer, in order to give that liquor the taſte and ſmell of Raſpberries, which is ſo powerful in the plant, that even in a dried ſtate its odour fills the room where it is kept. The *root* is tufted, very ſcaly. *Fronds* ſeveral, a ſpan high, lanceolate, tapering at each end, the lower *leaflets* being gradually much ſhortened. *Stalk* ſhort, bearing large, rounded, lax ſcales; thoſe on the leafy part, as well as on the mid-rib of each leaflet, being lanceolate and acute. The upper ſide of the *leaflets* is perfectly ſmooth; their lobes and indentations peculiarly elegant, without any terminal briſtles. *Sori* ſo crowded about the lower half of each leaflet, that their expanded *involucrums* ſometimes touch, or fold over each other, being moreover intermixed with ruſty membranous ſcales.

Sect. 5, marked 4 by Willdenow. *Frond doubly or triply pinnate. Involucrum rounded or kidney-ſhaped.* Forty ſpecies in Willdenow. The involucrum in this, as well as the preceding ſection, though, for the moſt part, laterally inſerted, is often nearly or completely orbicular, and it is even ſtrictly peltate in *A. aculeatum* and *lobatum.* Some of profeſſor Willdenow's ſpecies, adopted from Plumier's plates only, appear to us ſcarcely certain in genus,—ſuch are *A. nemoroſum*, Willd. n. 83, *velleum*, n. 84, and *ſquamatum*, n. 87.

A. *aculeatum.* Common Prickly Shield-fern. Swartz n. 53. Willd. n. 92. Fl. Brit. n. 5. Engl. Bot. t. 1562. Purſh n. 7. "Schkuhr Crypt. 41. t. 39." (Polypodium aculeatum; Linn. Sp. Pl. 1552. Mill. Illuſtr. t. 101. Bolt. Fil. 48. t. 26.)—Frond doubly pinnate: leaflets ovate, ſomewhat falcate, ſtalked, with prickly ferratures; hairy beneath. Common ſtalks and ribs ſcaly. Involucrum peltate, entire.—Found in ſhady woods and hollows, throughout Europe, as well as in Africa, and North America, bearing ſeed in ſummer and autumn. The *root* is large and tufted, producing numerous dark-green *fronds*, uſually two or three feet high, ſpreading in a circular manner, varying much in ſize; paler beneath; their general and partial *ſtalks* remarkably ſcaly. *Partial leaflets* about a quarter of an inch long, rigid or coriaceous, each tapering down into a ſmall ſhort footſtalk; their points and ſerratures each tipped with a little ſpinous briſtle; their upper edge at the baſe dilated, more or leſs, in a broadiſh auricle. *Sori* plentiful on the upper part of the frond, but in ſingle rows, and diſtinct, brown. *Involucrums* pale brown, orbicular, peltate, at length deeply umbilicated, quite entire all round, as in *A. Lonchitis*, to which this ſpecies and the following are cloſely allied, though all three are very diſtinct.

The late Mr. Rob. Teeſdale, (ſee Teesdalia,) found in many parts of England, a variety of this, which he ſuſpected might prove a diſtinct ſpecies. It is ſofter, and more delicate in texture, than the common kind, with ſmaller, more copious, *partial leaflets*, which are more remarkably ſtalked, and their auricles are larger, broader, and different in aſpect. This lay in Mr. Roſe's herbarium for *A. lobatum*, which it certainly is not, the *partial leaflets* being even leſs decurrent than in our common *aculeatum*. It may probably be the variety β of *Fl. Brit.* figured in Plukenet, t. 180. f. 1, which figure repreſents well enough the general appearance of the *frond*, and ſhape of the *leaflets*; but their partial ſtalks are much more conſiderable and evident than they appear in that plate. *A. aculeatum*, if tranſplanted into a dry open ſituation, ſoon diminiſhes greatly in ſize, ſo as to reſemble *A. Lonchitis*, for which we once received it; but theſe ſpecies are nevertheleſs eſſentially different, as any careful inveſtigator will find.

A. *lobatum.* Cloſe-leaved Prickly Shield-fern. Swartz n. 54. Willd. n. 95. Fl. Brit. n. 6. Engl. Bot. t. 1563. (Polypodium lobatum; Hudſ. 459. Filix aculeata major, pinnulis auriculatis crebrioribus, foliis integris anguſtioribus; Raii Syn. 121. F. aculeata, Lonchitidis æmula noſtras; Pluk. Phyt. t. 180. f. 3.)—Frond doubly pinnate: leaflets elliptical, ſomewhat falcate, decurrent, with prickly ſerratures; hairy beneath: the foremoſt of the loweſt pair very large. Common ſtalks and ribs ſcaly. Involucrum peltate, entire.—Found in ſhady places, under hedges, in England; not unfrequent in the county of Eſſex, where Ray firſt noticed this ſpecies, and from whence Mr. Edward Forſter has ſent us ſpecimens. The Rev. Mr. Francis has met with it at Edgefield, near Holt, Norfolk. There is no record of this fern being found out of Britain. The *fronds* are always of a narrower, more linear, form than the laſt, and generally altogether ſmaller, as well as more rigid, of a paler more ſhining green. *Leaflets* rather elliptical than ovate, and Mr. Dawſon Turner has well obſerved that they are decurrent, not ſtalked, which is perhaps one of the moſt certain means of diſtinguiſhing this ſpecies from *A. aculeatum*. The moſt ſtriking character, indicated by the ſpecific name, conſiſts in the great ſize, and angular-lobed figure, of the loweſt *partial leaflet*, on the upper ſide of each general leaflet or *pinna*, cloſe to the main ſtalk, often extending beyond the *pinna* above it. The upper half of the *frond*, principally, is covered with *fructification*. The *involucrum* is perfectly peltate, entire; finally umbilicated.

A. *marginale.* Marginal-flowering Shield-fern. Swartz n. 41. Willd. n. 93. Ait. n. 11. Purſh n. 8. "Schkuhr Crypt. 195. t. 45, b." (Polypodium marginale; Linn. Sp. Pl. 1522. Nephrodium marginale; Michaux Boreal.-Amer. v. 2. 267.)—Frond doubly pinnate; leaflets oblong, obtuſe, decurrent, crenate; almoſt pinnatifid at the baſe. Maſſes of capſules marginal. Involucrum orbicular, with a lateral ſinus.—In rocky ſhady places, from Canada to Carolina, bearing capſules in July. This ſpecies has often been ſuppoſed a native of Britain, *A. Oreopteris*, whoſe fructification is likewiſe marginal, having been taken for it; but the American plant is very diſtinct, more reſembling *Filix mas* than any other. The *marginale* however is a ſmaller plant, the upper half of whoſe *frond* only bears fructification, and the *leaflets* are bluntly crenate, inſtead of being ſharply ſerrated. They are moreover not uniform, as in *Filix mas*, but the lower ones of each *pinna* are larger and more or leſs pinnatifid. *Involucrum* tumid, corrugated, forming a complete circle, though not peltate.

A. *Filix mas.* Male Shield-fern. Swartz n. 59. Willd. n. 94. Fl. Brit. n. 4. Engl. Bot. t. 1458. Purſh n. 9. "Schkuhr Crypt. 45. t. 44. alſo A. eroſum, t. 45, and A. depaſtum, t. 51," according to Willdenow. (Polypodium Filix mas; Linn. Sp. Pl. 1551. Bolt. Fil. 44. t. 24. Woodv. Med. Bot. t. 49. Filix mas vulgaris; Ger. Em. 1128. Fuchſ. Hiſt. 595. Matth. Valgr. v. 2. 626. Camer. Epit. 991.)—Frond doubly pinnate: leaflets oblong, obtuſe, ſeſſile, fessile, sharply serrated without prickles, uniform. Masses of capsules crowded towards the rib and base of each leaflet. Involucrum orbicular, with a lateral sinus.—Very common throughout Europe, as well as in the northern parts of Asia, Africa, and America, in shady situations, under dry banks, bearing seed about July and August. The *root* is tufted and scaly, often very large. *Fronds* numerous, bright green, about a yard high, and a span wide, their *stalks* and principal *rib* scaly; the *rib* of each *leaflet* is sometimes a little hairy, and slightly bordered, though the *partial leaflets* are scarcely decurrent, except the uppermost. The *fructification* is abundant over great part of the frond, of a rich tawny-brown, crowded, not confluent. *Involucrum* tumid, umbilicated, with a lateral notch, which is rather more open than in *A. marginale*, but not quite so deep. The *root* is a celebrated cure for intestinal worms, in Switzerland and other parts of the continent; and its nauseous taste may, as we understand, be detected in one or more of the popular quack medicines, which in this country obtain credit by puffing advertisements, whose truth it is easier to believe than to examine. Happy if they are never composed of more dangerous materials than the root of the Male Fern!

A. *spinulosum*. Lesser Crested Shield-fern. Fl. Brit. n. 8. Engl. Bot. t. 1460. Swartz n. 58. Willd. n. 99. Pursh n. 11? "Schkuhr Crypt. 48. t. 48." (Polypodium spinulosum; Retz. Prodr. 250. Fl. Dan. t. 707. P. n. 841; Mull. Friedr. 193. t. 2. f. 2. Filix pumila saxatilis altera; Pluk. Phyt. t. 179. f. 5.)—Frond doubly pinnate: leaflets decurrent, elliptical, confluent, with deep-cut prickly serratures. Mid-rib smooth. Nerves zigzag. Involucrum orbicular, with a lateral sinus.—Native of boggy shady places, in various parts of Europe; as well as in North America, if Mr. Pursh be right; but he speaks of his plant as "a large species;" ours is certainly rather small, not above a foot high. The *root* is creeping. *Frond* broad, with a long *stalk*, which is scaly in the lower part only. *Partial leaflets* elliptic-oblong, of an elegant bright pellucid green, with wavy ribs; decurrent, so as to form a border to the partial stalk. *Dots* of capsules small, and rather distant. *Involucrum* small, soon pushed to one side. We see nothing in it of a glandular nature, as mentioned by Willdenow.

A. *dilatatum*. Great Crested Shield-fern. Fl. Brit. n. 9. Engl. Bot. t. 1461. Willd. n. 100. Pursh n. 12. (Polypodium dilatatum; Hoffm. Germ. v. 2. 7. P. aristatum; Villars Dauph. v. 3. 844. Bellardi in Act. Taurin. v. 5. 255. P. cristatum; Ehrh. Crypt. 81. Hudf. 457. Bolt. Fil. 42. t. 23. P. n. 845; Mull. Fl. Freidr. 193. t. 2. f. 4. Filix mas ramosa, pinnulis dentatis; Raii Syn. 124. Pluk. Phyt. t. 181. f. 2. F. mas, pinnulis cristatis; Moris. sect. 14. t. 3. f. 11.)—Frond doubly pinnate: leaflets deeply pinnatifid, sharply cut, with prickly teeth and serratures. Stalk and branches scaly. Involucrum kidney-shaped, soon orbicular, with a lateral sinus.—Native of shady watery places, sometimes on dry banks, in a sandy or gravelly soil, or in stony moist woods, throughout Europe. Mr. Pursh met with this species in the shady rocky woods of Pennsylvania and Virginia. The *root* is tuberous or tufted, scarcely creeping. *Fronds* generally two feet, or more, in height, though sometimes much smaller. Their broad, much compounded, form and structure, and their bright-green colour, give them a very handsome aspect. They are often triply pinnate, or at least their ultimate subdivisions are so deeply separated as to cause that appearance: these are pretty uniform, with deep, sharp, prickly-toothed serratures and points. *Stalks*, *ribs*, and *veins*, a little downy, or glandular; none of them zigzag, or at most very slightly so. *Fructification* copious all over the frond, rather crowded, not confluent, of a bright brown. *Involucrum* at first kidney-shaped, tumid, but soon becoming orbicular, the sinus nearly closing, retaining only an umbilicated depression, and at length the membrane remains folded together vertically, in the centre of the mass of *capsules*.

Sect. 6, marked 5 by Willdenow. *Frond either doubly pinnatifid, or doubly or triply pinnate. Involucrum lateral.* Twenty-six species in Willdenow; nineteen in Swartz. These are perhaps most entitled to constitute a distinct genus, but in several instances they too nearly approach the last section to admit of a clear generic definition.

A. *fontanum*. Smooth Rock Shield-fern. Swartz n. 74. Willd. n. 122. Engl. Bot. t. 2024. (Polypodium fontanum; Linn. Sp. Pl. 1550. Fl. Brit. 1114. Hudf. 456. Villars Dauph. v. 3. 849. P. n. 1706; Hall. Hist. v. 3. 15. Adiantum filicinum durius crispum minimum; Barrel. Ic. t. 432. f. 1. Filicula saxatilis, omnium minima, elegantissima; Tourn. Inst. 542. Pluk. Phyt. t. 89. f. 3.)—Frond linear-lanceolate, smooth, simply or doubly pinnate: leaflets alternate, rounded, their segments very sharply toothed. Stalks winged. Involucrum oblong.—Native of rocks in England, France, Switzerland, and other parts of Europe, but very rare in this country. Mr. Hudson, and the late Mr. Aiton, to our certain knowledge, have gathered it on Amersham church, Buckinghamshire, where it is no longer, as we are told, to be met with. Linnæus confounded this fern with what is now named Woodsia *hyperborea* (see that article); nor has it been well understood by botanists in general, being of rare occurrence, obscure in its generic character, and very variable in luxuriance. This may be seen by comparing Plukenet's figure above cited, fig. 3, with his fig. 2, quoted by Willdenow, after *Fl. Brit.* which last is we believe the same plant, but not under its usual and most natural appearance. When once seen in perfection, this truly elegant little fern can be confounded with no other. The *root* is tufted. *Fronds* from two to six inches high, rigid, smooth, rather glaucous, of a narrow lanceolate figure, composed of numerous, alternate, pinnate or pinnatifid *leaflets*, whose *partial leaflets*, or *lobes*, are wedge-shaped, somewhat stalked, with deep, very sharp, in some degree spinous, teeth, and all the stalks are winged. Masses of *capsules* at the mid-rib of each lobe, round, or nearly so, with a delicate white *involucrum* originating from the rib, by a straight lateral insertion, and separating inwards, that is, towards some other more principal rib, not towards the margin. Perhaps this plant is truly an *Asplenium*. Professor Willdenow has an *A. Halleri*, n. 125, which he considers abundantly distinct from *fontanum*, but to which he refers some of our above-mentioned synonyms. We have Haller's plant from Switzerland, and are perfectly certain of its being the same as our *fontanum*, though we have not the means of verifying all Willdenow's synonyms.

This writer, whose labours respecting *Filices* will ever do his memory great honour, notwithstanding errors unavoidably incident to so difficult an enterprise, has, after the example of Swartz, associated with this tribe some species which we refer to Cyathea. (See that article, written by the late Rev. Mr. Wood.) These are, *C. dentata*, *fragilis*, and *regia* of Fl. Brit. and Engl. Bot.; there being also several exotic species in the same predicament. Some of them come very near *A. fontanum*, just described, in the character of their *involucrum*, but they ill accord with the rest of this genus. A few species, now to be mentioned, perhaps connect them therewith. We shall select such as are most likely to elucidate the subject.

A. *bul-*

A. *bulbiferum.* Bulbiferous Shield-fern. Swartz n. 82. Willd. n. 126. Ait. n. 20. Purſh n. 13. "Schkuhr Crypt. 55. t. 57." (Nephrodium bulbiferum; Michaux Boreal.-Amer. v. 2. 268. Filix baccifera; Cornut. Canad. 5. t. 4. Barrel. Ic. t. 1120. Moriſ. ſect. 14. t. 3. f. 10.)—Frond doubly pinnate, oblong-lanceolate: leaflets ovate, obtuſe, pinnatifid or deeply ſerrated; upper ones confluent. Ribs bulbiferous.—Found in ſhady woods, among rocks, from Canada to Pennſylvania. *Purſh.* The *frond* is about eighteen inches high, narrow, bright-green, ſmooth, delicately cut; *partial leaflets* half an inch long at moſt, decurrent. Maſſes of *capſules* moſtly ſcattered, ſmall, round. The *involucrum* ſeems concave, almoſt hemiſpherical, turning to one ſide; but our ſpecimens are not ſufficient to aſcertain its exact figure. Several of the ſecondary *ribs* bear fleſhy bulbs, that fall off and become young plants, of which there are inſtances in WOODWARDIA, (ſee that article,) and ſome other ferns.

A. *Filix foemina.* Female Shield-fern. Swartz n. 83. Willd. n. 128. Fl. Brit. n. 7. Engl. Bot. t. 1459. "Schkuhr Crypt. 56. t. 58, 59." (Polypodium Filix foemina; Linn. Sp. Pl. 1551. Bolt. Fil. 46. t. 25. Filix mas non ramoſa, pinnulis anguſtis raris, profundè dentatis; Raii Syn. 121. Pluk. Phyt. t. 180. f. 4. Moriſ. ſect. 14. t. 3. f. 8.)—Frond doubly pinnate: leaflets pinnatifid, ſerrated, pointleſs, oblong-lanceolate. Stalk ſmooth. Dots oblong. Involucrum ſomewhat kidney-ſhaped.—A common fern throughout Europe, in marſhy ſhady places, varying greatly in dimenſions, but of a broadiſh-oblong figure, from one to two feet high, of a fine dark green, and very ſmooth. *Stalk* ſlender, pale, ſmooth, ſomewhat angular. *Leaflets* innumerable, tolerably uniform, delicately cut, bluntiſh, without any terminal briſtles. *Maſſes* of *capſules* covering the frond, one upon each ſegment of the leaflets, inſerted laterally into its minute mid-rib, oblong, the *capſules* dark brown. *Involucrum* ſeparating towards ſome larger adjoining rib, oblong, white, jagged or fringed, ſometimes quite ſtraight at the inſertion, ſometimes kidney-ſhaped, but always finally aſſuming the latter form, as the *capſules* advance and cauſe it to turn back.

A. *irriguum.* Brook Shield-fern. Engl. Bot. t. 2199. Compend. Fl. Brit. 156.—Frond lanceolate, pinnate: leaflets deeply pinnatifid, cut and ſharply toothed. Stalk quadrangular. Involucrum lateral, ſhort, jagged.—Found by T. F. Forſter, eſq. about the boggy margins of clear ſprings, near Tunbridge Wells, in June. Akin to the laſt, and in ſome degree to *A. Thelypteris*, but much ſmaller and more delicate than either. *Stalk* and *main rib* exactly ſquare, ſomewhat ſcaly, pellucid. *Leaflets* deeply pinnatifid, not pinnate; their lobes moſt like thoſe of *A. Filix foemina. Maſſes* of *capſules* ſmall, round. *Involucrum* white, inſerted as in the laſt, but ſhorter, extremely delicate, jagged and fringed, very ſlightly kidney-ſhaped, and rather hemiſpherical, ſomewhat reſembling *Cyathea fragilis.*

A. *alpinum.* Fine-cut Alpine Shield-fern. Swartz n. 89. Willd. n. 139. "Schkuhr Crypt. 60. t. 62, a, b." (Polypodium alpinum; Jacq. Coll. v. 2. 171. Ic. Rar. t. 642. P. n. 1709; Hall. Hiſt. v. 3. 15. Filicula alpina criſpa; Bauh. Pin. 358. Segu. Veron. ſuppl. 55. t. 1. f. 3. Moriſ. ſect. 14. t. 4. f. 27. Felce creſpo ſaſſatile; Pon. Bald. 224, with a figure.)—Frond triply pinnate: leaflets linear-wedge-ſhaped, pinnatifid, confluent; their ſegments linear, obtuſe, emarginate.—Found on the alpine rocks of Carinthia, Switzerland, France, and the north of Italy. A very ſlender delicate fern, from ſix to ten inches high, ſmooth, bright green, ſometimes aſſuming a tawny hue. The *frond* is linear-lanceolate; the ultimate ſegments peculiarly narrow and linear, alternate, ſharply cloven at the end, but otherwiſe entire; tapering down into the linear bordered ſtalk, quite ſmooth and naked, ſingle-ribbed. Every ſegment bears one ſmall round maſs compoſed of a very few *capſules*, rather large in proportion, each having a ſhining ring. The *involucrum* is very thin, white, and membranous, repreſented by Wulfen and Jacquin as perfectly peltate, without any notch, and attached by a fine central thread. This would make the plant a moſt indubitable *Aſpidium.* But in our ſpecimens, from Jacquin himſelf, the *involucrum*, turned aſide by the ripe *capſules*, remains in the form of a thin concave or vaulted ſcale, or ſcales, attached laterally beneath them, as in ſome of our Britiſh *Cyatheæ*, without any peltate appearance. Unfortunately we have no fructification in a ſufficiently early ſtate to verify Wulfen's deſcription or Jacquin's figure. We rely on Seguier and Haller for Pona's, and conſequently Moriſon's, ſynonym, though the figure ſuggeſts ſome idea of *Cheilanthes ſuaveolens* of Swartz and Willdenow, which Pona's account of the blackiſh or dark-coloured hue of the *root*, and upper part of the *frond*, rather confirms. Seguier's plate, though deſtitute of fructification, is ſufficiently accurate, and cannot be diſputed.

A. *montanum.* Chervil Shield-fern. Swartz n. 91. Willd. n. 147. "Schkuhr Crypt. 61. t. 63." (Polypodium montanum; Lamarck Franc. v. 1. 23. Allion. Pedem. v. 2. 287. Hæncke in Jacq. Coll. v. 2. 46. P. myrrhidifolium; Villars Dauph. v. 3. 851. t. 53, excluding Plukenet's ſynonym. P. n. 1710; Hall. Hiſt. v. 2. 16.)—Frond ternate, pentagonal, triply pinnate: ſegments elliptic-oblong, obtuſe, ſlightly toothed at the end, decurrent.—Native of the mountains of Auſtria, the Tyrol, Switzerland, Italy, and France. The name given by Villars is infinitely preferable to the unmeaning one which this elegant ſpecies has been ſuffered to retain. It differs from all we have hitherto deſcribed of this ſection, in the pentagonal outline of the *frond.* The colour is a light green. Ultimate *leaflets*, or ſegments, not linear, but rather elliptical, very ſmall and delicate. *Sori* ſolitary on each ſegment or lobe, ſmall, globoſe, of rather numerous brown *capſules*, entirely covered, while young, with a white, pellucid, hemiſpherical *involucrum*, which turns gradually back, remaining attached, at one ſide, under the capſules, like half the cup of a true *Cyathea.*

A. *odoratum.* Scented Shield-fern. Willd. n. 146.—"Frond ternate, doubly pinnate: leaflets oblong, obtuſe, hairy, deeply ſerrated; ſerratures blunt, with two teeth. Root chaffy."—Gathered by M. Bory de St. Vincent, on rocks in the iſland of Mauritius. *Root* as thick as the thumb, ſpringing from the fiſſures of rocks, denſely clothed with brown, oblong-lanceolate, very long-pointed, entire, brown, chaffy ſcales, half an inch in length. *Stalk* three or four inches long, ſmooth. *Ribs* hairy. *Branches* of the *frond* four or five inches long. *Leaflets* linear, oblong, obtuſe, clothed on both ſides with ſhort hairs; their lower ſerratures moſtly with four teeth. *Willdenow.* The compoſition of the *frond* ſeems to agree with the laſt, as being ternate, a character we have not obſerved in any others. This ſtructure gives the whole a pentagonal ſhape, very different from the oblong or lanceolate figure of the greater part of this genus.

ASSIUT, in *Geography.* See SIOUT.

ASTELIA, in *Botany*, a name originally given by ſir Joſeph Banks and Dr. Solander, formed from α, *without*, and στυλις, *a little pillar*, becauſe of the want of a ſtyle, which diſtinguiſhes this genus from ſeveral of its natural allies.—Brown

—Brown Prodr. Nov. Holl. v. 1. 291.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. between the *Aſphodeli* and *Junci* of Juſſ. *Brown*.

Gen. Ch. *Cal.* none, unleſs the corolla be ſo called. *Cor.* of one petal, in ſix deep, equal, ovate, half-membranous, permanent ſegments. *Stam.* Filaments ſix, awl-ſhaped, about the length of each ſegment, and inſerted into its baſe; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, ovate, pointed; ſtyles none; ſtigmas three, obtuſe. *Peric.* Berry ovate, more or leſs perfectly three-celled. *Seeds* numerous, elliptic-oblong, ſomewhat triangular, poliſhed. *Receptacles* three, attached longitudinally to the coat of the berry. Some *flowers* have imperfect *ſtamens*, and others, on a ſeparate plant, an imperfect *piſtil*.

Eſſ. Ch. Calyx none. Corolla in ſix deep, equal, half-membranous ſegments, bearing the ſtamens. Styles none. Stigmas obtuſe. Berry ſuperior, with many *ſeeds*.

The habit of the plants of this genus reſembles Tillandsia, (ſee that article,) and they in like manner ſometimes grow on the living or dead trunks of trees. The *roots* are fibrous. Radical *leaves* imbricated in three rows, either linear-lanceolate, or ſword-ſhaped, keeled, furniſhed, on one or both ſides, with cloſe, compreſſed, ſhaggy hairs; their baſe with ſilky wool. *Stem* very ſhort or none, with few leaves. *Flowers* ſmall, ſilky externally, racemoſe, or panicled, rarely almoſt ſolitary; their partial *ſtalks* without a joint, and having each a ſolitary *bractea* at its baſe.

Mr. Brown thinks *Aſtelia* not nearly allied to any other genus, though ſomewhat approaching *Tillandſia*. The New Zealand plants, upon which ſir Joſeph Banks and Dr. Solander founded this genus, differ from the ſolitary ſpecies which grows in Van Diemen's iſland, in having a *berry* of three cells: two ſpecies moreover have a pitcher-ſhaped ſix-cleft *calyx*, (*corolla*, as we term it,) which in another is pulpy. Should the genus therefore be divided? Melanthium *pumilum* (ſee that article n. 9.) appears to be an *Aſtelia*. *Brown*.

The learned author defines one ſpecies only.

A. *alpina*. Alpine Aſtelia. Br. n. 1.—"Leaves ſtraight, ſilky on both ſides. Cluſter divided in the lower part; its branches bearing few flowers. Berries oval, ſingle-celled. Flowers with ſix deep ſegments."—Gathered by Mr. Brown, on mountains in the iſland of Van Diemen.

To this we are enabled to add the following.

A. *Menzieſiana*. Many-flowered Aſtelia.—Leaves ſtraight; ſilky beneath. Stalk ſhaggy. Cluſters panicled, many-flowered. Berry ovate, three-celled. Flowers in ſix deep ſegments.—Gathered in the Sandwich iſlands, by Mr. Menzies, to whom we are obliged for a ſpecimen. The *leaves* are all nearly, or quite, radical, eighteen inches long, a half or three-quarters of an inch broad, taper-pointed, entire, ſtrongly ribbed; ſmooth and green above; pale, and ſilky with ſhining cloſe hairs, beneath. *Stalk* ſolitary, nearly as tall as the leaves, round, denſely clothed with pale, ſhaggy, ſhining wool; ſimple below; panicled at the top, with many hairy *cluſters*, each two or three inches long. Segments of the *corolla* hairy at the back. *Berries* the ſize of a currant, pointed, each containing ſeveral large, black, ſhining *ſeeds*.

To theſe are to be added the New Zealand ſpecies, not yet publiſhed, which, by Mr. Brown's remarks, appear to be at leaſt three in number; and probably alſo the above-mentioned *Melanthium*.

ASTEPHANUS, from α, *without*, and ςεφανος, *a crown*, becauſe of the want of the crown to the ſtamens, uſual in this order.—Brown in Wern. Tranſ. v. 1. 54.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla nearly bell-ſhaped; mouth and tube without ſcales. Crown of the ſtamens none. Anthers tipped with a membrane. Maſſes of pollen pendulous. Follicles . . . . .

Perennial, generally twining, plants, of ſouthern Africa, with oppoſite *leaves*. *Umbels* lateral, between the footſtalks. *Flowers* ſmall.

This genus is founded on *Apocynum triflorum* and *lineare*, Linn. Suppl. 169, with two new ſpecies in the Bankſian collection. *A. cordatum* and *lanceolatum*, Thunb. Prodr. 47, probably belong to it. The character is alſo modified ſo as to admit a very remarkable plant, found by Mr. Maſſon in the ſame country, whoſe *ſtem* is ſhrubby, with ſpineſcent branches; *leaves* extremely minute, oppoſite, diſtant, and heart-ſhaped. *Corolla* rather urceolate than bell-ſhaped; the orifice of the tube furniſhed with deflexed hairs. Maſſes of *pollen* fixed by their tapering ſummits. *Stigma* blunt. *Follicles* nearly cylindrical, ſmooth. The whole genus differs from Microloma chiefly in the want of ſcales within the tube. Mr. Brown thinks they might be united, but this would lead to the junction alſo of Metastelma, which being of Weſt Indian origin, he was unwilling to join it with Cape plants. We ſhould have thought the laſt objection might have been overruled by ſo near an agreement of character. See the two articles in queſtion.

ASTERABAD, in *Geography*, a ſmall province of the Perſian empire, ſometimes included in Mazanderan, which it reſembles in appearance, climate, and productions. It is the ancient Hyrcania; bounded on the W. by the Caſpian ſea; on the S. ſeparated by a lofty ridge of mountains from the diſtricts of Damgan and Biſtan; extending to the E. as far as longitude 58°, and divided from Daheſtan by the river Aſhor. The capital of the ſame name is ſituated near the mouth of the river Eſter, on a bay of the Caſpian ſea. E. of the capital, in which much treaſure is ſaid to be depoſited, and 25 furſungs from Biſtan, is the town of Jorjan, the ancient Hurkaun, from which the name Hyrcania may probably be derived. See Astrabad.

ASTROLOMA, in *Botany*, ſo called from αςρον, *a ſtar*, and λωμα, *a fringe*, alluding to the five tufts of hair, which form a ſtar, near the bottom of the tube of the flower, internally.—Brown Prodr. Nov. Holl. v. 1. 538. (Vintenatia; Cavan. Ic. v. 4. 28.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Ericæ*, Juſſ. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, permanent, double; inner of five elliptic-lanceolate, acute, equal, erect leaves; outer of four or more, much ſhorter, concave, imbricated ſcales. *Cor.* of one petal, tubular; tube twice the length of the calyx, inflated, furniſhed on the inſide, near the baſe, with five tufts of ſoft hairs; limb in five deep, ſpreading, lanceolate, acute, hairy ſegments, ſhorter than the tube. Nectary a cup-ſhaped undivided gland, ſurrounding the baſe of the germen. *Stam.* Filaments five, linear, inſerted into the tube, and encloſed within it; anthers oblong, in the mouth of the tube. *Piſt.* Germen ſuperior, roundiſh, of five cells; ſtyle capillary, the length of the tube; ſtigma "globoſe, denſely downy." *Cavan.* *Peric.* Drupa globular, ſlightly juicy. *Seed.* Nut of five cells, hard and ſolid, not burſting, with a pendulous oblong kernel in each cell.

Eſſ. Ch. Outer calyx of ſeveral imbricated leaves. Corolla tubular; tube ſwelling, twice as long as the calyx, with five internal tufts of hair at the baſe; tube ſhorter, ſpreading, bearded. Filaments linear, within the tube. Drupa almoſt dry, of five cells.

This

This genus is very closely related to STENANTHERA, as well as to MELICHRUS. (See those articles.) We might perhaps safely unite them all to STYPHELIA. The opinion of Mr. Brown, however, who has examined them in a fresh state, deserves all possible attention, and we have therefore followed his views of the subject. *Astroloma* consists of shrubs, of humble stature, for the most part decumbent. *Leaves* scattered, often ciliated. *Flowers* axillary, erect. Six species are mentioned by this author, under the following characters.

1. A. *humifusum*. Diffuse Astroloma. (Vintenatia humifusa; Cavan. Ic. v. 4. 28. t. 348.)—Stem prostrate, much branched. Leaves linear-lanceolate, fringed with minute bristles; slightly convex on the upper side.—Found in various parts of New Holland, on the south-west coast, as well as at Port Jackson, and in Van Diemen's island. We have not heard of this plant, nor any other of its genus, in the gardens of Europe. The *stems* are a foot, more or less, in length, round, spreading flat on the ground, and sending up numerous, crowded, erect, short, leafy *branches*. *Flowers* on the main stems and branches, axillary, solitary, sessile, an inch long, of a fine crimson, with a glaucous, somewhat rose-coloured, *calyx*. *Drupa* nearly the size of a pea, reddish, smooth, almost concealed in the permanent calyx. The abbé Cavanilles dedicated this plant, as a distinct genus, to the honour of M. Ventenat, though he made a mistake in its orthography. But there is another VENTENATIA, of which the reader may find an account in its proper place. The remaining five species have all been found in the southern part of New Holland, by Mr. Brown, and apparently by no other botanist. We give their names and definitions from his work.

2. A. *prostratum*. Prostrate Astroloma.—Stem prostrate, much branched. Leaves linear-lanceolate, fringed; flat above; rather convex beneath. — Seen with unexpanded flowers only, by Mr. Brown.

3. A. *denticulatum*. Toothed Astroloma.—Stem procumbent, or somewhat erect. Leaves lanceolate, flat, fringed, with hairs dilated at their base.

4. A. *pallidum*. Pale Astroloma. — Stem diffuse, with ascending branches. Leaves lanceolate, sessile, fringed, imbricated: slightly concave on their upper side.

5. A. *compactum*. Compact Astroloma.—Stem diffuse, with very short ascending young branches. Leaves obovato-lanceolate, fringed; rather concave on their upper side; tapering at the base into short footstalks.

6. A. *tectum*. Upright Astroloma.—Stem erect, somewhat branched. Leaves lanceolate-oblong, flat, imbricated; rough-edged; their teeth minute, very short, obtuse.

ATHENS, in *Geography*, l. 4, *r*. 478. Add—Also, a township of Maine, in the county of Somerset, with 374 inhabitants.—Also, a township of Pennsylvania, in Lycoming county, having 759 inhabitants.—Also, a county of Ohio, containing 2790 inhabitants.—Also, a township of the said county, with 840 inhabitants.

ATHEROPOGON, in *Botany*, from αθηρ, *an awn*, and πωγων, *a beard*, alluding to the appearance of the flowers. —Muhlenb. in Willd. Sp. Pl. v. 4. 937. Gram. 287. Pursh 75.—Class and order, *Triandria Digynia*. (Polygamia Monoecia, Willd.) Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume of two valves, two-flowered; floret neuter. *Cor.* Glume of two valves; in the perfect floret the outer valve has three awns, and the latter is cloven; in the neutral one the outer valve is membranous, cloven, awned below the point, the inner has two awns. *Stam.* in one floret only, filaments three; anthers scarlet. *Pist.* in the same flower only, germen oblong; styles two; stigmas feathery. *Seed* solitary, oblong.

Eff. Ch. Calyx of two valves, two-flowered; one floret neuter. Corolla of two valves, the outermost with three awns: in the neutral floret both valves are awned.

1. A. *apludoides*. Reflexed Atheropogon. Willd. n. 1. Pursh n. 1. — Gathered by the late Rev. Dr. Muhlenberg, on gravelly hills, in Pennsylvania, flowering in September. *Root* perennial. *Stem* twelve or eighteen inches high, round, smooth, jointed in the lower part. *Leaves* lanceolate, very long; hairy at the base; their *sheaths* downy, crowned with a *stipula*. *Cluster* simple, erect, of about twenty alternate, distant, pendulous *flowers*, each on a short partial stalk. *Anthers* of a vermilion hue. Willdenow attributes but one valve to the *calyx*, Muhlenberg two. Their descriptions are meagre. There is no reason for referring this genus to *Polygamia*, even according to the most ample ideas of that class, for the presence of a neutral *floret* does not constitute its character, nor is perhaps any genus of grasses in the *Triandria Digynia* quite exempt from such.

ATHEROSPERMA, so named by the celebrated voyager M. Labillardiere, from αθηρ, *an awn*, and σπερμα, *seed*.—Labill. Nov. Holl. v. 2. 74. — Class and order, *Monoecia Monadelphia*. Nat. Ord. *Atherospermeæ*, Brown Bot. of Terra Australis, 21.

Gen. Ch. Male, *Cal.* Perianth of one leaf, bell-shaped, with eight obtuse marginal segments; the four alternate ones external and largest; the inner ones coloured. *Cor.* none. *Stam.* Filaments numerous, erect, inserted into the base of the calyx, and much shorter than its limb, somewhat combined at the bottom, and accompanied by scales; anthers elliptical, attached by the back, erect, of two cells, each opening by a longitudinal valve from the base upwards.

Female, *Cal.* as in the male, with the addition of numerous, internal, acute, marginal scales. *Cor.* none. *Pist.* Germens numerous, ovate, hairy; styles solitary, thread-shaped, hairy; stigmas simple. *Peric.* none, except the permanent, enlarged, hardened calyx. *Seeds* as many as the germens, small, oval, each crowned with its permanent feathery style.

1. A. *moschata*. Nutmeg Atherosperma. Labill. as above, t. 224.—Native of Cape Van Diemen, from whence we have specimens from the author; with others from A. B. Lambert, esq., gathered by general Grose. A *tree*, twenty-five feet or more in height; the young branches square, finely downy. *Leaves* opposite, on short thick stalks, without *stipulas*, elliptic-oblong, acute, either quite entire, or with a few sharp scattered teeth; smooth and besprinkled with minute pellucid dots above; finely downy and hoary beneath, with a reddish mid-rib and slightly visible veins. *Flowers* axillary, solitary, stalked, drooping, rather small. *Bracteas* two, (*Involucrum* of Labillardiere,) close to each flower, ovate, acute, concave, downy, deciduous. *Calyx* finely hairy; that of the fruit much enlarged, half an inch broad, hemispherical, clothed with dense silky hairs, and filled like a bason with feathery-tailed *seeds*, whose down resembles that of a syngenesious plant, and is not represented in the above figure. The dried *leaf*, like every other part, as far as we can examine, has a very strong flavour of nutmegs, to which, and not to any musky scent, the specific name alludes. We have chiefly followed our author in the above description, except a most important character, of the valvular *anthers*, borrowed from Mr. Brown, whose remarks in the following article will be found greatly to illustrate the present, and to render some future alterations necessary.

ATHEROSPERMEÆ, a new natural order, thus denominated from its leading genus. See the laſt article. Brown Bot. of Terra Auſtr. 21.

Flowers either ſeparated or united. *Calyx* of one leaf; its margin divided into a generally double row of ſegments, the innermoſt, ſometimes all of them, half petal-like (or internally coloured). There are alſo in the female, as well as in the united, flowers, ſmall, internal ſcales, at the baſe of theſe ſegments. *Corolla* none. *Stamens* in the male flowers numerous, inſerted into the bottom of the calyx, with acceſſory ſcales; in the united flowers they are fewer, and inſerted into the throat; *anthers* attached by the back, of two cells, each cell opening by a longitudinal valve, ſeparating from the baſe upwards. *Germens* one or more, generally an indefinite number, with a ſingle, erect germ; *ſtyles* ſolitary, occaſionally lateral, or from the baſe; *ſtigmas* ſimple. *Seeds*, (termed ſeed-like pericarps by Mr. Brown,) awned with the feathery ſtyles, and encloſed in the enlarged tube of the calyx; *embryo* erect, ſhort, in the bottom part of a ſoft fleſhy *albumen*. The ſeveral ſpecies are *trees*, with ſimple, oppoſite *leaves*, deſtitute of *ſtipulas*. *Stalks* axillary, ſingle-flowered.

Juſſieu it ſeems, Ann. du Muſ. v. 14. 116, has eſtabliſhed an order termed *Monimieæ*, in which *Atheroſperma* is included, along with *Pavonia* of Ruiz and Pavon, its near ally, and the *Ambora*, (ſee MITHRIDATEA,) *Monimia*, and *Ruiza*, which three laſt Mr. Brown conſiders as conſtituting the genuine order of *Monimieæ*, and therefore he has propoſed the above, of which a moſt eminent diſtinction is their having the valvular *anthers* of the LAURI. (See that article.) This ſeparation is confirmed by two New Holland plants evidently of the ſame family, but which have united *flowers*, a ſtructure not probable in *Monimieæ*. The place of *Atheroſpermeæ*, in a natural ſeries, is difficult to fix. Though ſo widely different, in moſt parts of their ſtructure, from *Lauri*, (now called *Laurinæ*,) they agree in *anthers*, and very remarkably with ſome of them in ſenſible qualities. *Pavonia* above-mentioned cannot, by Mr. Brown's account, be ſeparated from *Atheroſperma*, differing merely in the oblong form, and regular burſting, of its female calyx! Its qualities are the ſame.

ATKINSON, l. 3, *r.* in the year 1810, 556 inhabitants.

ATMOSPHERE, *Weight, &c. of the.* Col. 4, l. 3 from the bottom, for half an inch *r.* $\frac{1}{50}$th or .02 of an inch.

ATMOSPHERIC AIR, *Chemical Compoſition of.* See AIR.

ATOMIC THEORY, in *Chemiſtry*. This important theory, which has added new luſtre to chemiſtry by raiſing it to the rank of a mathematical ſcience, was entirely unknown when the earlier volumes of the Cyclopædia were publiſhed. The hiſtory of its origin and progreſs has been amply detailed in ſubſequent parts of the work, particularly under the articles PROPORTIONS, *Definite*, SIMPLE *Bodies*, and THEORY, *Atomic;* ſo that we have little left to add here, except a brief ſummary of ſome recent modifications ſuggeſted by Dr. Prout, and ſubſequently adopted by Dr. Thomſon. See an anonymous Eſſay on the relation between the Specific Gravities of Bodies in their gaſeous State, and the Weights of their Atoms, vols. vi. and vii. of Thomſon's Annals of Philoſophy.

The object of Dr. Prout in the above eſſay is to ſhew, 1ſt, that the theory of volumes ſuggeſted by Gay Luſſac, and adopted by Berzelius and ſome others, is abſolutely identical with Dalton's Theory of Atoms; and 2dly, that the ſpecific gravities of bodies in their gaſeous ſtate are all multiples of the ſame unit, which unit is conſidered as *hydrogen*.

Dr. Prout's eſſay is terminated very abruptly, and is evidently imperfect. The above views are not explicitly ſtated in the paper alluded to, though it is obvious they are what the author had in view; and as they have been recently adopted by Dr. Thomſon, in the new edition of his Syſtem of Chemiſtry, which may be viewed in the light of a national work, we conſider it our duty to lay a brief account of them before our readers.

The firſt of the above points attempted to be eſtabliſhed by Dr. Prout has been already diſcuſſed at ſome length in the articles PROPORTIONS, *Definite*, and THEORY, *Atomic*. Indeed, we believe it is very generally admitted by all thoſe chemiſts who have taken the pains to examine and think upon the ſubject. It is chiefly founded upon facts and reaſonings, which few at preſent affect to doubt, and of which the following is a ſummary. 1. Bodies unite together in certain definite proportions by *weight*, that is, certain weights of ſome bodies always combine with certain weights of other bodies. This conſtitutes the baſis of the *atomic theory*, or the theory of *definite proportions*, as ſome have choſen to term it. 2. Subſtances in a gaſeous ſtate have been demonſtrated to combine with reference to their *bulk* or *volume*, that is to ſay, one volume of one gas always combines with one or more ſimilar volumes of another, and not with any odd fractional parts. Moreover, the volume or bulk of the reſulting compound, if it happens to be a gas, always bears a ſimilar relation to the original volumes of its component gaſes. For theſe important laws we are indebted to Gay Luſſac, and they conſtitute the baſis of what has been denominated the *theory of volumes*. 3. It is univerſally admitted, that the *ſame* weights of the *ſame* reſulting compounds are formed when bodies unite in a gaſeous ſtate according to their *volume*, as when they unite in any other manner according to their weight; thus, for example, one volume (100 cubic inches) of muriatic acid gas will unite with one volume (100 cubic inches) of ammoniacal gas, and form the ſame weight of the ſame compound, (muriate of ammonia,) as if 39.183 grains (the abſolute weight of 100 cubic inches) of muriatic acid, united with 18.003 grs. (the abſolute weight of 100 cubic inches) of ammonia; the two numbers 39.183 and 18.003 being to one another as 1.278 : .5900, or as 37 : 17, the ſpecific gravities and the weights of the atoms of theſe two ſubſtances reſpectively. Such is a brief ſtatement of the facts; and it is argued that if the above data are correct, it follows irreſiſtibly from them that the *weights* of the *atoms* of bodies, are to one another as the ſpecific gravities of the ſame bodies in a ſtate of gas; and conſequently that the theory of volumes and the theory of atoms is one and the ſame thing, different ſets of numbers only being employed. Some apparent deviations from this law, which however cannot be by any means conſidered as exceptions, will be noticed hereafter.

With regard to the ſecond point contended for by Dr. Prout; namely, that the ſpecific gravities of all bodies in their gaſeous ſtate, or, in other words, the weight of their atoms are multiples of the ſame unit or hydrogen; it is partly founded upon experiment and reaſon, and partly (at preſent at leaſt) upon hypotheſis. The following is a ſummary of the grounds upon which the opinion has been formed.

1. The ſpecific gravity of ammoniacal gas, according to ſir Humphry Davy, is .590164, common air being 1.000; according to Biot and Arrago, it is a fraction greater: hence

hence Dr. Prout has fixed upon .5902 as the fpecific gravity of this gas. The fp. gr. of azote he affumes as .9722, common air being 1.000, for reafons ftated below. Now, as ammonia is known to be compofed of one volume azote, and three volumes hydrogen, condenfed into two volumes, the fpecific gravity of hydrogen, according to thefe data, muft be .0694.

2. Atmofpheric air is admitted to be univerfally compofed of about 21 *per cent.* of oxygen, and 79 *per cent.* of azote, which fo nearly correfponds with one volume of oxygen, and four volumes of azote, or 20 oxygen and 80 azote, that Dr. Prout has concluded that the above is its true compofition, and confequently that it is a real chemical compound. (See AIR, *Atmofpheric.*) Now the weight of the atom of oxygen being fuppofed to be 10, and that of the atom of azote 17.5, (Dr. Wollafton makes it 17.54,) the fpecific gravity of oxygen gas, according to thefe data, will be 1.1111, and of azote .9722. But thefe numbers are multiples of .0694 for $1.1111 \div .0694 = 16$, and $.9722 \div .0694 = 14$.

Such are two of the leading circumftances ftated in the above effay, which appear to have induced our author to examine further into the fubject. For this purpofe, he feems to have felected a certain number of fubftances, and to have inftituted a feries of experiments on them, with the view of afcertaining the truth of the opinions which he had been led to adopt. Thefe experiments are faid to have been numerous; but their refults are ftated in a very fummary way, and in a manner certainly not very likely to carry conviction. The whole is afterwards arranged in tables, and there contrafted with the acknowledged refults of other experimentalifts, with the view of fhewing how nearly they coincide with each other. Thefe tables will be found at the end of the prefent article, in an extended form, and comprehending all the new determinations of Dr. Thomfon. The near approach to whole numbers of the weights of the atoms of all thefe fubftances, which have been moft carefully examined, and are beft known, is certainly very fingular, and muft ftrike every one who has paid attention to the fubject. At the fame time, no argument can be advanced againft the opinion that certain relations exift among the combining weights or atoms of bodies; on the contrary, this opinion feems much more probable than that they have no connection and are entirely independent of one another.

With refpect to the queftion, whether the above opinion will ever be verified by actual experiment? it is difficult to determine. The differences in general affumed by Dr. Prout are fo fmall, that in the prefent ftate of chemical analyfis they may be fairly faid to be within the limits of poffible error; until, therefore, fome more refined methods of experimental refearch be difcovered, we can fcarcely hope the matter will be decided in this manner.

We mentioned above, that there are a few fubftances whofe fpecific gravity does not correfpond with the weight of their atom; thus the fpecific gravity of oxygen, for example, is fixteen times that of hydrogen, while its combining weight is only half or eight times that of hydrogen. This at prefent cannot be explained; but it is remarkable, that the fpecific gravities are always fome multiple of the weight of the atom. (See further on this fubject under THEORY, *Atomic.*) In the following tables will be found other examples of the curious circumftance under confideration.

We fhall make no further obfervations at prefent, but adopt Dr. Prout's plan of throwing together in tables the great mafs of evidence on the fubject, and leaving the queftion to be decided by the impartial judgment of our readers.

In the firft and fecond columns of the following tables are given the fpecific gravities and weights of the atoms of the different fubftances, fuppofing them to be in a gafeous ftate, hydrogen being 1; "and if," fays Dr. Prout, "we fuppofe the volume to be 47.2135 cubic inches, the numbers will at the fame time reprefent the number of grains this quantity of each gas will actually weigh." We may remark here, that if thefe views fhould ever be eftablifhed, they afford an excellent rational ftandard for weights, as compared with meafures. Thus the cube of the pendulum, for example, vibrating feconds, might be the unit in volume of hydrogen, whofe actual weight might be the unit in weight. Such a relation between weights and meafures would be as general and immutable as the laws of nature themfelves, and be worthy of the enlightened age in which we live. In the third column are the corrected numbers, the atom of oxygen being fuppofed, according to Dr. Wollafton, Dr. Thomfon, &c., 10 or 1: and in the fourth, the fame as obtained by experiment are ftated to fhew how nearly they coincide. The other columns will be fufficiently underftood from infpection. The laft column in the firft table contains the numbers recently affigned by Mr. Brande to the elementary fubftances.

TABLE I.—Elementary Subſtances.

	Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10 from Experiment.	Specific Gravity, Common Air being 1.000	Specific Gravity, Common Air being 1.000 from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Numbers lately aſſigned by Mr. Brande, Hydrogen being 1.
*	Hydrogen - -	1	1	1.25	1.32	.06944	.073	2.118	2.230	1
*	Carbon - -	6	6	7.5	7.54	.4166	——	12.708	——	5.7
?	Boron - -	6	6	7.5	6.6	.4166	——	12.708	——	5.5
?	Silicum - -	8	8	10.0	10.2	.5555	——	16.944	——	15
?	Aluminum - -	10	10	11.25	——	.6944	——	21.180	——	15
	Magneſium - -	12	12	15.0	15.6	.8333	——	25.416	——	11
?	Phoſphorus - -	12	12	15.0	15.6	.8333	——	25.416	——	10
*	Azote - -	14	14	17.5	17.54	.9722	.969	29.652	29.560	13
*	Oxygen - -	16	8	10.0	10.0	1.1111	1.104	33.888	33.672	7.5
*	Sulphur - -	16	16	20.0	20.0	1.1111	——	33.888	——	15
?	Glucinum - -	18	18	22.5	——	1.2500	——	38.124	——	——
*	Calcium - -	20	20	25.0	25.46	1.3888	——	42.360	——	19
*	Sodium - -	24	24	30.0	29.1	1.6666	——	50.832	——	22
?	Nickel - - -	27	27	33.75	——	1.8740	——	57.486	——	55.5
*	Iron - - -	28	28	35.0	34.5	1.9440	——	59.302	——	——
?	Chrome - -	28	28	35.0	35.0	1.9440	——	59.302	——	52
	Manganeſe - -	28	28	35.0	——	1.9440	——	59.302	——	56.5
?	Cobalt - -	29	29	36.25	——	2.0130	——	61.420	——	——
*	Zinc - - -	32	32	40.0	41.0	2.2222	——	67.777	——	33
?	Yttrium - -	32	32	40.0	——	2.2222	——	67.777	——	——
*	Chlorine - -	36	36	45.0	44.1	2.5006	2.483	76.248	——	33.5
?	Zirconium - -	37	37	46.25	——	2.5694	——	78.366	——	45
?	Arſenic - -	38	38	47.5	47.86	2.6388	——	80.484	——	——
*	Potaſſium - -	40	40	50.0	49.1	2.7777	——	84.720	——	37.5
	Strontium - -	44	44	55.0	55.07	3.0555	——	93.192	——	44.5
?	Antimony - -	——	——	56.25	56.25	3.1250	——	95.310	——	85
?	Cerium - -	46	46	57.5	——	3.1944	——	97.428	——	——
?	Iridium - -	48	48	60.0	——	3.3333	——	101.664	——	——
?	Molybdenum -	48	48	60.	60.	3.3333	——	101.664	——	44
?	Palladium - -	56	56	70.0	——	3.8888	——	118.604	——	——
	Tin - - -	59	59	73.75	73.5	4.0970	——	124.972	——	55
	Copper - -	64	64	80.0	80.0	4.4444	——	135.555	——	60
*	Barium - -	70	70	87.5	87.0	4.8611	——	148.260	——	65
	Biſmuth - -	71	71	88.75	89.94	4.9300	——	150.378	——	66.5
?	Tungſten - -	96	96	120.0	120.0	6.6666	——	203.333	——	——
	Lead - - -	104	104	130.0	129.5	7.2222	——	220.272	——	97
	Silver - -	110	110	137.5	135.0	7.6380	——	232.980	——	102
?	Rhodium - -	120	120	150.0	149.03	8.3333	——	254.160	——	——
*	Iodine - -	120	120	150.0	156.21	8.3333	——	254.160	——	117
?	Uranium - -	125	125	156.25	——	8.6800	——	264.750	——	——
?	Platinum - -	181	181	226.25	——	12.5680	——	383.350	——	92
?	Gold - -	198	198	248.75	249.68	13.7490	——	419.364	——	97
	Mercury - -	200	200	250.0	250.0	13.8888	——	423.600	——	190

Thoſe ſubſtances marked thus * were contained in Dr. Prout's table. Thoſe marked thus ? will probably hereafter be found different; or at leaſt we are not certain if the numbers attached to them are accurate.

TABLE II.—Combinations with Oxygen.

Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10, from Experiment.	Specific Gravity, common Air being 1.000.	Specific Gravity, Common Air being 1.000 from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Elements by Volume.	No. of Vol. after Combination.	Elements by Weight.
Water - -	9	9	11.25	11.32	.625	.6896	19.062	21.033	.5 ox. + 1 hyd.	1	1 ox. + 1 hyd.
Carbonic oxyd -	14	14	17.5	17.54	.9722	.956	29.652	29.16	.5 ox. + 1 car.	1	1 ox. + 1 car.
Nitrous oxyd -	22	22	27.5	—	1.5277	1.614	46.596	49.227	.5 ox. + 1 az.	1	1 ox. + 1 az.
Common air -	14.4	36	45	—	1.000	1.000	30.5	30.5	.5 ox. + 2 az.	2.5	1 ox. + 2 az.
Euchlorine -	44	44	55	—	3.0555	2.409	93.192	73.474	.5 ox. + 1 chl.	1 ?	1 ox. + 1 chl.
Lime, &c. -	28	28	35	35.46	1.9444	—	59.304	—	.5 ox. + 1 cal.	—	1 ox. + 1 cal.
Carbonic acid -	22	22	27.5	27.54	1.5277	1.510	46.596	46.313	1 ox. + 1 car.	1	2 ox. + 1 car.
Nitrous gas - -	15	30	37.5	—	1.0416	1.0388	31.77	31.684	1 ox. + 1 az.	2	2 ox. + 1 az.
Sulphureous acid, &c.	32	32	40	—	2.2222	2.1930	67.777	66.89	1 ox. + 1 ſul.	1	2 ox. + 1 ſul.
Nitrous acid -	38	38	47.5	—	2.6388	2.427	80.484	74.0234	1.5 ox. + 1 az.	1	3 oz. + 1 az.
Sulphuric acid, &c.	40	40	50	50	2.7777	—	84.72	—	1.5 ox. + 1 ſul.	1 ?	3 oz. + 1 ſul.
Nitric acid - -	54	54	67.5	67.54	3.75	—	114.372	—	2.5 ox. + 1 az.	1 ?	5 ox. + 1 az.
Chloric acid -	76	76	95	—	5.277	—	160.968	—	2.5 ox. + 1 chl.	1 ?	5 ox. + 1 chl.
Iodic acid, &c. -	160	160	200	—	11.111	—	338.888	—	2.5 ox. + 1 iod.	1 ?	5 ox. + 1 iod.

The ſubdiviſions of the above Table include the different ſtates of oxydation of the different ſubſtances. A few only of the numbers of thoſe beſt known are introduced, as azote, &c., with the view, in the firſt place, of ſaving room; but more particularly becauſe they are little or altogether unknown, or, if known, may be eaſily obtained from the data given in Table I.

TABLE III.—Other Compounds, chiefly of Hydrogen.

Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10, from Experiment.	Specific Gravity, Common Air being 1.000.	Specific Gravity, Common Air being 1.000, from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Elements by Volume.	No. of Vol. after Combination.	Elements by Weight.
Carburetted hydrogen -	8	4	5	5.09	.5555	.5555	16.999	16.999	2 hyd. + 1 car.	1	2 hyd. + 1 car.
Olefiant gas - -	14	7	8.75	8.86	.9722	.9740	29.652	29.72	1 hyd. + 1 car.	.5	1 hyd. + 1 car.
Sulphuretted hydrogen - -	17	17	21.25	21.32	1.1805	1.177	36.006	35.89	1 hyd. + 1 ſul.	1	1 hyd. + 1 ſul.
Muriatic acid -	18.5	37	46.25	45.42	1.284	1.278	39.183	38.979	1 hyd. + 1 chl.	2	1 hyd. + 1 chl.
Hydriodic acid -	62.5	125	156.25	157.53	4.3402	4.3463	132.375	—	1 hyd. + 1 iod.	2	1 hyd. + 1 iod.
Ammonia - -	8.5	17	21.25	21.5	.5902	.5900	18.003	18.000	3 hyd. + 1 az.	2	3 hyd. + 1 az.
Phoſphuretted hydrogen - -	13	13	16.25	16.25	.9027	—	27.534	—	1 hyd. + 1 phoſ.	1	1 hyd. + 1 phoſ.
Cyanogen - -	26	26	32.5	32.52	1.8055	1.8064	55.068	—	2 car. + 1 az.	1	2 car. + 1 az.
Hydro-cyanic acid -	13.5	27	33.75	33.846	.9374	.9360	28.593	—	1 cya. + 1 hyd.	2	1 cya. + 1 hyd.
Chloro-cyanic acid -	31	62	77.5	—	2.1527	2.1111	65.659	—	1 cya. + 1 chl.	2	1 cya. + 1 chl.

ATRAGENE,

ATRAGENE, in *Botany*, (see our former article,) a name adopted from Theophrastus, whose αθραγενη, according to De Candolle, is probably our *Clematis Vitalba*. This genus is much reduced by the learned writer just named, who refers *A. japonica* and *alpina* to *Clematis*, *A. capensis* and *tenuifolia* to ANEMONE. (See that article.) The only remaining species is *A. zeylanica*, which De Candolle retains as a genus by itself, under the new name of *Naravelia*, taken from *Narawael* of Herm. Zeyl. 26, one of its synonyms. But this being a Linnæan *Atragene*, and the only one which remains, that name must, by every principle and right, remain with it, especially as it is distinguished from *Clematis* by the original generic character of *Atragene*. A figure of this plant is given in Roxb. Coromand. v. 2. 47. t. 188.

ATRIPLICES, the twenty-ninth natural order in Jussieu's system, the sixth of his sixth class, whose characters are given under LAURI. Mr. Brown, Prodr. Nov. Holl. v. 1. 405, adopts, from De Candolle, the appellation of *Chenopodeæ* for this order, for which we have discovered no reason, *Atriplex* being as well-known a genus, and as expressive a type of the order, as *Chenopodium*. The characters are as follows.

Calyx of one leaf, often deeply divided. *Stamens* definite, inserted into the bottom of the calyx. *Germen* solitary, superior; style either single, or wanting, or for the most part manifold, of a determinate number; stigmas one, rarely two, to each style. *Seeds* solitary, (numerous in *Phytolacca*, two in *Galenia*,) either naked, or covered by the calyx, which thus becomes, in a manner, superior; or inclosed in a pulpy, or a capsular, pericarp. *Corculum* surrounding a farinaceous mass. *Stem* in numerous instances herbaceous, in some shrubby. *Leaves* mostly alternate, sometimes opposite. *Stamens* occasionally in separate flowers from the *pistils*.

Sect. 1. *Fruit pulpy.*

Phytolacca, *Rivina*, *Salvadora*, and *Bosea;* the last suspected to be more akin to the *Rhamni*.

Sect. 2. *Fruit capsular.*

Petiveria; Polycnemum; Camphorosma; and *Galenia:* not without some doubts respecting the two last.

Sect. 3. *Seed covered by the calyx. Stamens five.*

Basella: Anredera, Juss. which is Fegopyrum scandens, &c., Sloane Jam. v. 1. 138. t. 90. f. 1; *Anabasis; Caroxylum*, Thunb.; *Salsola; Spinacia; Acnida; Beta; Chenopodium;* and *Atriplex*.

Sect. 4. *Seed covered by the calyx. Stamens fewer than five.*

Crucita; Axyris; Blitum; Ceratocarpus; and *Salicornia*.

Sect. 5. *Seed not covered by the calyx.*

Corispermum only.

This order is analogous to the *Holeraceæ* of Linnæus, though many extraneous things are referred to the latter.

Mr. Brown asserts that the *Atriplices*, or *Chenopodeæ* are not distinguishable by any character from the AMARANTHI, (see that article,) though different in habit, and differing from the *Illecebreæ*, (by which is meant Jussieu's third section of *Amaranthi*,) in the want of *stipulas*. The insertion of the stamens into the calyx, according to this accurate observer, is not absolutely constant, nor are the *Amaranthi* all free from that insertion. Yet on this mark the distinction is founded, not merely between these two neighbouring orders, but between the sixth and seventh classes of Jussieu, which thus run into each other. We do not mean, by pointing out these intricacies of Nature, which render it so difficult for us to submit her to human regulations, to throw needless difficulties in the way of those, who attempt this arduous task by other means than we ourselves pursue. We merely remind them of our common fallibility, and recommend patient investigation, with mutual assistance, in the place of dogmatical assumption and invidious criticism.

ATTELABUS, col. 2, l. 1, for are *r.* is; l. 23, *dele* which see respectively, and add—One of the principal species is A. *Coryli*, a smallish insect found in hazel-trees, black, with red wing-sheaths, usually measuring about a quarter of an inch in length. A much smaller species is the A. *Betulæ*, altogether black, and remarkable for gnawing the leaves of that tree in the early part of spring; so that they appear notched off the edges. The A. *Apiarius* is an elegant species, deriving its name from the injury which its larva does in bee-hives by destroying the young. See APIARIUS.

ATTER *of Roses.* See *Essence of* ROSES.

ATTLEBOROUGH. Add—It contains 2716 inhabitants.

ATTRACTION *of Mountains*, col. 2, l. 50, *r.* 4364,4; l. 51, for 43″ *r.* 42″.94.

AVA, l. 1, *r. Aungwa*.

AUBENAS, l. 3, for Coiron *r.* Privas.

AVERILL, in *Geography*, a township of America, in Vermont and county of Essex, having nine inhabitants.

AUGUST, a gold coin of Saxony, of which are double, single, and half august d'ors, reckoned at 10, 5, and 2½ rix dollars: 35 single augusts weigh a Cologne mark of gold 21 carats 8 grains fine.

AUGUSTA, in *Geography*, a town of the district of Maine, in the county of Kennebeck, containing 1805 inhabitants.

AUGUSTA, a county of Virginia, l. 4, *r.* 14,308, and 2880 slaves.

AULAX, in *Botany*, from αυλαξ, *a furrow*, alluding to the chink in each petal containing one of the stamens.—Berg. Cap. 33. Brown Tr. of Linn. Soc. v. 10. 49. Ait. Hort. Kew. v. 5. 373.—Class and order, *Dioecia Tetrandria*. Nat. Ord. *Proteaceæ*, Juss. Brown.

Ess. Ch. Male, Flowers distinct. Calyx none. Petals four, bearing the stamens. Pistil imperfect.

Female, Flowers aggregate. Calyx none. Petals four, bearing imperfect stamens. Stigma oblique. Nut exposed, tumid, bearded.

1. A. *pinifolia*. Pine-leaved Aulax. Berg. n. 1. Br. n. 1. Ait. n. 1.

Male. Protea pinifolia; Linn. Mant. 187. Willd. Sp. Pl. v. 1. 515. Andr. Repos. t. 76.

Female. P. bracteata; Thunb. Diss. n. 24. t. 1. Linn. Suppl. 118. Willd. Sp. Pl. v. 1. 517.

Leaves thread-shaped, channelled.—Native of hills near the Cape of Good Hope. A *shrub* one or two feet high, with round, red, leafy branches. *Leaves* numerous, scattered, simple, undivided, smooth, slender, spreading every way, two or three inches long. *Flowers* yellow; the male in several long clusters, forming a terminal leafy umbel; female in a dense solitary head.

2. A. *umbellata*. Umbellate Aulax. Br. n. 2. Ait. n. 2.

Male. Protea aulacea; Thunb. Diss. n. 33. t. 2. Willd. Sp. Pl. v. 1. 520.

Female. P. umbellata; Thunb. Diss. n. 34. Linn. Suppl. 118. Willd. Sp. Pl. v. 1. 520. Andr. Repos. t. 248.

Leaves linear-spatulate, flat.—Native of hills at the Cape of Good Hope. A *shrub* two or three feet high, with bright-green, bluntish, smooth *leaves*. *Flowers* yellowish, terminal; the male in shortish blunt clusters; female in a solitary whitish head, encompassed with long, narrow, yellow, radiating *bracteas*.

Both these are green-house plants in England, flowering in the latter part of summer. The second is said to be the most hardy.

AVOLA, l. 4, for minor *r.* major.

AVON, in *Geography*, a townſhip of America, in the diſtrict of Maine and county of Somerſet, having 304 inhabitants.

AURA, in *Ornithology*, l. 5, *r.* Ulloa.

AURANTIA, in *Botany*, a well-marked natural order, comprehending the Orange tribe and its allies, as the name expreſſes. Juſſieu is the author of this order, the ſeventieth in his arrangement, or the tenth of his thirteenth claſs; nor are there any traces of it among the *fragmenta* of Linnæus. For the characters of this important thirteenth claſs, we refer the reader to Gerania, and proceed to define the order in queſtion.

Calyx of one leaf, often deeply divided. *Petals* definite, broad at the baſe, inſerted around a diſk on which the germen is placed. *Stamens* placed upon the ſame diſk, definite, or more rarely indefinite, their filaments either diſtinct, or combined in one or more parcels. *Germen* one; ſtyle one; ſtigma ſimple, or rarely divided. *Fruit* moſtly pulpy, ſometimes capſular, of one or many cells, with one or two *ſeeds* in each. *Corculum* ſtraight, aſcending, deſtitute of albumen. *Stem* arboreous or ſhrubby. *Leaves* alternate, ſimple, or, in ſome few inſtances, compound.

Sect. 1. *Fruit with only one ſeed.* The leaves of this ſection are not marked with reſinous dots, and hence the plants are termed ſpurious *Aurantia*. Except *Ximenia*, their affinity to this order is by no means apparent, in any degree, to us.

Ximenia; Heiſteria; and *Fiſſilia* a genus of Commerſon's, whoſe identity with *Olax* we have already indicated in its proper place. See Fissilia.

Sect. 2. *Fruit many-ſeeded, pulpy.* Theſe are genuine *Aurantia*, having the leaves full of pellucid reſinous dots.

Chaleas, which is not only, as Juſſieu ſuſpected, the ſame genus, but the very ſame ſpecies with *Murraya; Bergera; Murraya; Cookia* of Sonnerat; *Citrus;* and *Limonia*.

Sect. 3. *Fruit many-ſeeded, capſular.* Leaves not dotted. Genera akin to *Aurantia* and to *Meliæ*.

Ternſtromia, of Mutis, with *Tonabea* of Juſſieu, which is the very ſame genus, are here prefixed to *Thea* and *Camellia;* but ſurely they have little relationſhip to the true *Aurantia*, either in their habit or fructification. They form an order by themſelves, and there is ſo much connection between their ſtamens and the corolla, as might remove this order to Juſſieu's ninth claſs, where it would very naturally follow his *Guaiacanæ*, if not abſolutely reducible to that very family, at leaſt to its ſecond ſection.

That Linnæus had formed no conception of any order analogous to the genuine *Aurantia*, is evident, from his having referred *Citrus* to a ſection of the *Bicornes*, and having left *Limonia* undetermined, though ſo naturally and evidently akin to *Citrus*. He had even introduced *Garcinia*, with a mark of doubt indeed, into the ſame ſection of *Bicornes;* but expunged it in manuſcript, giving its oppoſite leaves as a reaſon. By that character, and indeed every other, *Garcinia* anſwers to Juſſieu's *Guttiferæ*, a natural order which, however ſtriking and important, likewiſe eſcaped the ſagacity of Linnæus.

AURELIUS, in *Geography*, l. 1, for military *r.* poſt; l. 2, for Onondago *r.* Cayuga; l. 5, for 1796 *r.* 1810, and for 123 *r.* 323. Add—The number of inhabitants, who are principally employed in agriculture, is 4642, and this capital of Cayuga county ranks the third in population and wealth of the county, and has three poſt-offices.

AURORA, a townſhip of Ohio, in the county of Portage, containing 189 inhabitants.

AUSTIN, a townſhip of Ohio, in the country of Trumbull, containing 440 inhabitants.

AUTOGRAPHUM. See Writing-*Machine*.

AUTOMALITE. See Ruby and Mineralogy, *Addenda*.

AXIA, in *Botany*, from ἄξιος, *valuable*, alluding to its medical virtues and high eſtimation.—Loureir. Cochinch. 35. Vahl Enum. v. 2. 38.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Nyctagines*, Juſſ.?

Gen. Ch. *Cal.* Perianth ſuperior, of three ſhort, acute, unequal, deciduous leaves. *Cor.* of one petal, bell-ſhaped, very ſmall, its border in ten flat, ſhort, rounded, equal ſegments. *Stam.* Filaments three, capillary, the length of the corolla; anthers of two globular lobes. *Piſt.* Germen inferior, ovate, furrowed; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma thickiſh. *Peric.* none. *Seed* ſolitary, ovate, furrowed, hairy.

Eſſ. Ch. Calyx three-cleft, ſuperior, deciduous. Corolla of one petal, with ten ſegments. Seed ſolitary.

1. A. *cochinchinenſis. Nhon ſâm phu yen* of the Cochinchineſe.—Native of Cochinchina, nor did Loureiro ever meet with this plant elſewhere. It is almoſt as much eſteemed as *Gin-ſeng*, as a warm ſtrengthening medicine, promoting expectoration and the various ſecretions, uſeful in intermittent fevers, indigeſtions, &c. The *ſtem* is ſhrubby, procumbent, with many knotty branches, extending about two feet. *Root* tapering. *Leaves* oppoſite, unequal, ſmall, ovato-lanceolate, ſlightly crenate, downy. *Flowers* ſmall, variegated with red and white, in nearly terminal cluſters.

AYA-PANA, a South American plant of the genus Eupatorium, (ſee that article,) of which an account is given in the Bulletin des Sciences, n. 67. 147, as peculiarly efficacious againſt the poiſon of ſerpents, on which account it is much cultivated in the iſland of Mauritius, and in Cayenne. The bruiſed leaves are ſaid to cure the ſting of a ſcorpion, and that of a poiſonous fiſh, named *laſt*. An infuſion of the herb has proved uſeful in dropſy, as well as in ſyphilitic diſorders. This plant has been cultivated in the ſtoves at Paris, but we have heard nothing of it in England.

AYMOUTH. See Eymouth, *dele*.

AZOLLA, in *Botany*, an unexplained name.—Lamarck Dict. v. 1. 343. Illuſtr. t. 863. Willd. Sp. Pl. v. 5. 541. Purſh 672. Juſſ. 17, under Salvinia. Brown Prodr. Nov. Holl. v. 1. 166. Bot. of Terra Auſtr. 79.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, Linn. Juſſ. Rhizoſpermæ; Roth. De Cand. *Marſileaceæ*, Brown.

Gen. Ch. Male, in pairs, encloſed in a ſingle-leaved, membranous, cloſe *involucrum*, (occaſionally ſolitary under the female,) ovate, of two cells, their outer covering burſting tranſverſely; *upper cell* containing nine or ſix angular bodies, inſerted around a tubular axis, which finally opens at the ſummit; *lower cell* ſpherical, cloſed by a double membrane, and filled with a fluid, which may perhaps change to a powder.

Female, axillary, on the ſame plant, ſolitary (ſometimes accompanied underneath by a ſolitary male). *Involucrum* double, both cloſed, membranous; the *outer* like that of the male flowers; *inner* ovate, without valves, containing numerous *capſules*, without valves, attached by capillary ſtalks to a common *receptacle*, originating from the baſe of the involucrum. *Seeds* from ſix to nine, angular, with exterior radicles.

Eſſ. Ch. Male, ovate, of two cells, ſeparating tranſverſely; the upper containing ſeveral angular, ſtalked bodies.

Female on the ſame plant, capſules numerous, ſtalked, globoſe, globofe, of one cell and one valve, in an ovate, clofe involucrum. Seeds feveral, angular.

1. A. *filiculoides*. South-American Azolla. Lamarck n. 1. t. 863. (A. magellanica; Willd. n. 1. Mufcus fquamofus aquaticus elegantiffimus; Feuill. Voy. v. 3. 43. t. 35. Dill. Mufc. 335. t. 43. f. 72.)—Frond pinnate. Leaflets all papillary. Roots fmooth.—Found by Feuillée in Peru; by Mr. Menzies in Chili; in watery places; and at the ftraits of Magellan by Commerfon. This is a little floating moffy plant, refembling a *Jungermannia*, an inch or two long, alternately pinnate, with fmall, imbricated, ovate, flefhy *leaves*, clothed externally with papillary hairs, and membranous at the edges. The *roots* are long, flender, fmooth and naked, dark brown. No fructification has been difcovered in this fpecies.

2. A. *pinnata*. Triangular Pinnate Azolla. Br. n. 1. Bot. of Terra Auftr. 79. t. 10.—Frond pinnate, triangular. Upper leaflets papillary. Roots longitudinally feathery.—Gathered by Mr. Brown, in lakes and ponds, at Port Jackfon, New South Wales. A little floating plant like the foregoing. *Roots* axillary, folitary, perpendicular, unbranched, pellucid, hooded at the point when young, at firft fight quite fimple, but under a magnifier they appear feathery about the middle part. *Frond* half an inch long. *Branches* two-ranked, alternate, crowded. *Leaves* alternate, imbricated every way; thofe on the upper fide of each branch ovate, fomewhat angular, cellular, thick, often reddifh, rough on the upper furface with papillary tubercles; thofe on the under fide thinner, fmooth, and lefs angular. *Flowers* on the under fide of the frond, feffile, folitary at the bafe of each branch.

Mr. Brown feems to think the true *pollen* of this curious genus originates in the watery or turbid fluid, which he once found changed to powder, and which may be difcharged through the tube above, whofe angular appendages, once fufpected to be *anthers*, (fee his *Prodr.*) may by preffure facilitate its ejection, whether in a watery or powdery ftate.

3. A. *rubra*. Red Orbicular Azolla. Br. n. 2.—Frond orbicular; lobes palmate; their fubdivifions undivided or cloven. Upper leaves fmooth. Roots feathery beyond the middle.—Gathered by Mr. Brown, at Port Jackfon, as well as in Van Diemen's ifland. The fructification has effentially the fame ftructure of that of *A. pinnata*, except the angular bodies of the upper cell being only fix, not nine. *Brown.*

4. A. *caroliniana*. Carolina Azolla. Willd. n. 2. Purfh n. 1.—"Leaves imbricated, ovate-oblong, obtufe, fpreading; red underneath."—Found by Richard, in Carolina; by Purfh floating on the waters of lake Ontario. We know nothing more of this fpecies; and as thofe who have defcribed it were unacquainted with the fructification, as well as with Mr. Brown's fpecific definitions, the above character requires revifion.

AZORELLA, Lamarck Dict. v. 1. 344. Illuftr. t. 189. Juff. 226. 453. See CHAMITIS, as well as BOLAX hereafter.

AZOTE, in *Chemiftry*. The fpecific gravity of azote, according to the moft recent determinations, is .9722, and 100 cubic inches of it will weigh, at a mean temperature and preffure, 29.652 grains. Biot and Arrago make its fpecific gravity .9691, and Lavoifier .978. See ATOMIC *Theory*.

A new compound of chlorine and azote was difcovered a few years ago, which, from its remarkable properties, deferves to be defcribed here.

This compound feems to have been firft noticed by M. Dulong in 1812; but this chemift, on account of two fevere accidents which happened to him in the courfe of his experiments, did not complete the inveftigation of its properties, nor publifh any thing on the fubject. Sir H. Davy was informed of the difcovery of the fubftance foon after, but not of the method of preparing it. Chancing, however, to hear from Mr. Children, that Mr. Burton of Cambridge had procured an oily fubftance by paffing a current of chlorine through a folution of nitrate of ammonia, he was enabled to prepare the compound in queftion, and inveftigate its properties.

Chloride of azote may be prepared by placing a jar of chlorine gas over a folution of nitrate or muriate of ammonia, heated to about 110°. The gas is flowly abforbed, and an oily-like matter collects at the bottom of the veffel, which is the fubftance in queftion. Care muft be taken not to collect at one time more than a globule or two, as it explodes with prodigious violence from the flighteft caufe. Its colour clofely refembles that of olive-oil. It is tranfparent: its fmell is ftrong and peculiar, though it is not fo difagreeable nor injurious to the lungs as chlorine. It is very volatile, and foon difappears when left in the open air. At 160° it may be diftilled over without danger, but is partially decompofed. The temperature of 200° only occafions it to evaporate fafter, but when heated to 212° it explodes with amazing force. In a vacuum it is converted into vapour, but again affumes the liquid form when the preffure of the air is reftored. This vapour, if heated fufficiently, explodes with as much violence as the liquid itfelf. The fp. gr. of the chloride of azote is 1.653. It does not become folid on expofure to cold. When left in water it fpeedily difappears, and azotic gas efcapes. In ftrong muriatic acid, chlorine efcapes, and muriate of ammonia remains in folution. When brought in contact with phofphorus, oils, and many other fubftances, it explodes with very great violence. Metals, refins, fugar, and moft of the gafes, do not caufe it to explode. The experiments of fir H. Davy on the compofition of this curious fubftance render it probable, in Dr. Thomfon's opinion, that it is compofed of one volume or atom of azote, and four volumes or atoms of chlorine.

Azote has likewife the property of forming an analogous compound with *iodine*. (See IODINE, and SIMPLE *Bodies*.) The celebrated chemift Berzelius ftill, we believe, maintains the opinion, that azote is a compound of oxygen and an unknown fubftance, which he denominates *nitricum*; and a laborious fet of experiments was fome time ago publifhed by Mr. Miers, to fhew that this unknown fubftance is nothing but *hydrogen*. Chemifts in general, however, do not at prefent acquiefce in either of thefe opinions, but confider azote as an elementary fubftance.

For the combinations of azote with oxygen, fee ATOMIC *Theory*, NITRIC *Acid*, &c. and PROPORTIONS, *Definite*.

AZUMBRE, a liquid meafure in Spain. See ARROBA, *Addenda*.

B.

BABIANA, in *Botany*, an unexplained name. Can it allude to the Syrian Venus, *Babia*? Or does it acknowledge the baser etymology of *Papio*, a Baboon, becaufe thofe animals perhaps eat the roots? (See the 8th fpecies.) —Ker in Sims and Kon. Ann. of Bot. v. 1. 233. Dryandr. in Ait. Hort. Kew. v. 1. 104.—Clafs and order, *Triandria Monogynia*. Nat. Ord. *Enfatæ*, Linn. *Irides*, Juff.

Gen. Ch. *Cal.* Spatha inferior, large, of two valves; the inner valve deeply cloven, with an intermediate pellucid membrane. *Cor.* of one petal, fuperior; tube funnel-fhaped, longer than the fpatha; limb fhorter than the tube, in fix deep, ufually regular and nearly equal fegments, fometimes very irregular. *Stam.* Filaments three, thread-fhaped, inferted into the mouth of the tube, erect, much fhorter than the limb; anthers oblong, incumbent. *Pift.* Germen roundifh; ftyle thread-fhaped, rather longer than the tube; ftigmas three, fpreading, obtufe, undivided. *Peric.* Capfule roundifh-ovate, coriaceous, unequally tumid, of three cells and three valves. *Seeds* numerous, globofe, pulpy, tapering at the bafe, at length corrugated, and deformed by mutual preffure.

Eff. Ch. Spatha of two valves; the innermoft deeply divided. Corolla tubular; limb in fix deep fegments. Stigmas three, fpreading. Seeds pulpy.

1. B. *Thunbergii.* Many-fpiked Babiana. Ker n. 2. Ait. n. 1. (Antholyza plicata; Thunb. Prodr. 7. Fl. Cap. v. 1. 169. Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 223.)—Leaves many-ribbed, finely downy as well as the ftalks and fheaths. Corolla ringent. — Native of fandy plains near the fea, below *Verlooren Valley*, at the Cape of Good Hope, flowering in October. *Thunberg*. Mr. Maffon fent this fpecies, in 1774, to Kew, where it flowers in April. *Bulb* deep in the ground. *Leaves* radical, equitant, acute, with fome principal, yellow, and many intermediate green ribs; minutely downy on both fides, with foft prominent hairs. *Stalk* radical, taller than the leaves, a foot high, zigzag, denfely clothed with fine foft hairs, and divided into about half a dozen alternate, fpiked, many-flowered branches. *Flowers* crimfon, two inches long, crowded, erect.

2. B. *ringens.* Gaping Babiana. Ker n. 1. Ait. n. 2. (Antholyza ringens; Linn. Sp. Pl. 54. Willd. Sp. Pl. v. 1. 223. Thunb. Prodr. 7. Fl. Cap. v. 1. 167. Gladiolo æthiopico fimilis; Comm. Hort. v. 1. 81. t. 41. Rudb. Elyf. v. 2. 237.)—Leaves many-ribbed, fmooth. Stalk downy. Corolla ringent. — Found in low fandy fields, often by the way fide, in many places about the Cape of Good Hope, flowering from July to September. Not at prefent in the gardens, as far as we could ever learn; or at leaft we never heard of its flowering. Not fo tall as the preceding, nor fo much branched, but the *flowers* are larger and more handfome, remarkably widely ringent, with one *ftamen* far removed from the other two.

3. B. *nervofa.* Four-ribbed Babiana. (Antholyza nervofa; Thunb. Prodr. 7. Fl. Cap. v. 1. 164.)—Leaves fmooth, with four ftrong, prominent ribs. Stalk fmooth. Spike oblong, two-ranked. Corolla ringent.—Native of the Cape of Good Hope. *Leaves* three or four, acute, fmooth, with four yellowifh, elevated ribs, erect, about a foot high. *Stalk* as tall as the leaves. *Flowers* flefh-coloured, drooping, crowded into an ovate, rather abrupt, fpike; their lower lip rather the fhorteft, reflexed. There can furely be no doubt refpecting the genus of this plant.

4. B. *tubiflora.* Long-tubed Babiana. Ker n. 3. Ait. n. 3. Ker in Curt. Mag. t. 847. (Gladiolus tubiflorus; Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 219. Thunb. Diff. n. 23. t. 2. f. 2. Fl. Cap. v. 1. 210. Jacq. Ic. Rar. t. 266. G. inclinatus; Redoubt. Liliac. t. 44.)

β. Ker in Curt. Mag. t. 680. (G. tubatus; Jacq. Ic. Rar. t. 264. Willd. Sp. Pl. v. 1. 219. Redout. Liliac. t. 261. G. longiflorus; Andr. Repof. t. 5.

γ. Ker ibid. (G. tubati varietas; Jacq. Ic. Rar. t. 265.)

Leaves ribbed, plaited, downy, taller than the downy ftalk. Tube of the corolla flender-clubfhaped, thrice as long as the irregular nearly equal limb, whofe upper fegment is divaricated.—Native of Svartland, at the Cape of Good Hope, flowering from Auguft to October. The *leaves* vary greatly in length, but are more or lefs elliptic-oblong, and taller than the oblique *ftalk*, whofe height is from one to ten inches. *Spike* folitary, fimple. *Sheaths* lanceolate, downy. *Corolla* white, with a crimfon fpot on each of the three lower fegments; its tube fometimes reddifh, varying in thicknefs, but always about three inches long.

5. B. *fpathacea.* Stiff-leaved Babiana. Ker n. 4. Ait. n. 4. Ker in Curt. Mag. t. 638. (Gladiolus fpathaceus; Thunb. Diff. n. 25. Fl. Cap. v. 1. 208. Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 221.)—Leaves plaited, rigid, pungent, fomewhat downy. Tube of the corolla thread-fhaped, twice as long as the regular limb. Sheaths tumid, pointed, fmooth.—Found in dry fituations above the Cape of Good Hope, in Bockland, and Hantum, flowering in October and afterwards. *Thunberg*. *Leaves* linear-lanceolate; thofe of old plants often naked; their bafe tapering into long *footftalks*, dilated downward. *Stalk* varying in height, from four inches to near three feet. *Spike* many-flowered. *Spathas* much inflated, with beaked points. *Tube* very flender.

ſlender. *Limb* pale blueiſh purple, with elliptic-oblong, nearly equal ſegments, an inch long; three alternate ones bluntiſh, with a point; three lowermoſt marked with white and violet.

6. B. *ſambucina.* Elder-ſcented Babiana. Ker n. 12. Ait. n. 5. Ker in Curt. Mag. t. 1019. (Gladiolus ſambucinus; Jacq. Hort. Schoenbr. v. 1. 7. t. 15. Vahl Enum. v. 2. 117.)—Leaves ſcarcely downy. Stalk ſmooth. Tube hardly longer than the downy, pointed ſpatha; throat cylindrical; ſegments of the limb nearly equal and uniform, keeled.—Imported from the Cape, by George Hibbert, eſq. in 1799. About a ſpan high, with large, violet-coloured, very ſweet-ſcented *flowers,* each of whoſe ſegments, above an inch long, has a darker violet keel, or mid-rib.

7. B. *ſulphurea.* Pale Babiana. Ker n. 5. Ait. n. 6. Ker in Curt. Mag. t. 1053. (Gladiolus ſulphureus; Jacq. Ic. Rar. t. 239. Vahl Enum. v. 2. 99. G. plicatus; Andr. Repoſ. t. 268.)—Leaves downy, ſhorter than the aſcending downy ſtalk. Tube ſhorter than the ſpatha, and but one-third as long as the nearly uniform limb.—Native of the Cape, from whence it was procured by Meſſrs. Lee and Kennedy, in 1795. The *leaves* are elliptic-oblong, ſtrongly plaited, downy all over. *Flowers* large, with a ſhort tube; limb cream-coloured, with ſome tints of blue.

8. B. *plicata.* Sweet-ſcented Babiana. Ker n. 13. Ait. n. 7. Ker in Curt. Mag. t. 576. (Gladiolus plicatus; Thunb. Diſſ. n. 24. Fl. Cap. v. 1. 211, with many wrong ſynonyms. G. fragrans; Jacq. Hort. Schoenbr. v. 1. 7. t. 14.)—Leaves elliptic-lanceolate, looſely plaited, very ſoft and downy. Segments of the limb nearly equal, the length of the tube; upper one hooded.—One of the moſt common ſpecies at the Cape, near the town, and in various other places, flowering from May to October. Thunberg ſays the Europeans call this plant *Babianer.* Has this, whatever it means, given occaſion to Mr. Ker's generic name? Nearly akin to the laſt, but of a ſofter texture. *Flowers* fragrant, pale lilac, or blueiſh-white, marked with violet at the baſe of their three lower ſegments. *Stamens* aſcending.

9. B. *ſtricta.* Upright Babiana. Ker n. 6. Ait. n. 8. Ker in Curt. Mag. t. 621. 637. (Gladiolus ſtrictus; Ait. ed. 1. v. 1. 63. G. plicatus; Linn. Sp. Pl. 53. Ixia; Mill. Ic. 103. t. 155. f. 1.)—Leaves elliptic-lanceolate, plaited, downy. Corolla funnel-ſhaped, nearly regular; ſegments about as long as the tube, all flat.—Native of the Cape; long known in our green-houſes, though not very frequent. The *flowers* are ſmaller than moſt of the foregoing, with obovate, pointed, equal ſegments, either all blue, or pale grey, or alternately white and purpliſh, each hardly an inch long. *Spatha* ſmall, linear-lanceolate, downy.

10. B. *villoſa.* Dark-red Babiana. Ker n. 8. Ait. n. 9. Ker in Curt. Mag. t. 583. (Ixia villoſa; Ait. ed. 1. v. 1. 58. I. pumicea; Jacq. Ic. Rar. t. 287. Willd. Sp. Pl. v. 1. 198. Gladioli plicati var. purpurea; Thunb. Diſſ. n. 24. Fl. Cap. v. 1. 213.)—Leaves downy. Tube thread-ſhaped, the length of the regular, bell-ſhaped limb, whoſe three alternate ſegments are obtuſe with a point.—Native of the Cape. The *leaves* are rather broad, elliptic-lanceolate, ſtrongly plaited. *Stalk* oblique and wavy, rather taller than the leaves. *Flowers* the ſize of the laſt, of a deep blood-red, without ſcent; their tube ſuddenly united to the limb, without any dilatation at the throat. *Anthers* dark violet, remarkably large and thick.

11. B. *rubro-cyanea.* Red and blue Babiana. Ker n. 7. Ait. n. 10. (Ixia rubro-cyanea; Jacq. Ic. Rar. t. 285. Willd. Sp. Pl. v. 1. 198. Curt. Mag. t. 410. I. villoſa; Schneev. Ic. t. 16. Gladiolus rubro-cyaneus; Vahl Enum. v. 2. 98.)—Leaves elliptic-lanceolate, ſtalked, downy. Tube thread-ſhaped, the length of the regular, wide-ſpreading limb, whoſe ſegments are uniform, rhomboid-obovate.—Native of the Cape. Sent to Kew by Mr. Maſſon in 1794. Very nearly akin to the laſt, particularly in the ſhape of the *tube;* but the *limb* is more ſpreading, with uniform blue ſegments, red at their baſe, making a very ſhowy appearance. It is not eaſy to diſcover by what rule Vahl reduced this plant to *Gladiolus,* except by the herbage.

12. B. *obtuſifolia.* Blunt-leaved Babiana. Ker n. 9. (Ixia villoſa; Jacq. Ic. Rar. t. 284. Willd. Sp. Pl. v. 1. 198.)—Leaves elliptical, bluntiſh, downy. Tube thread-ſhaped, nearly the length of the funnel-ſhaped regular limb, whoſe ſegments are elliptical; throat ſomewhat dilated.—Native of the Cape. We know this ſpecies merely from Jacquin's figure, where it is repreſented of humble growth, all over downy, with an oblique *ſtalk,* and a few large *flowers* of an uniform blueiſh-white; their *ſheaths* elliptic-lanceolate, ſomewhat tumid. *Stigmas* ſlender. *Anthers* ſmall, blue.

13. B. *diſticha.* Hyacinth-ſcented Babiana. Ker n. 10. Curt. Mag. t. 626. (Gladiolus plicatus; Jacq. Ic. Rar. t. 237.)—Leaves elliptic-oblong, ſtrongly plaited, finely fringed. Throat of the corolla funnel-ſhaped; ſegments of the limb linear-lanceolate, nearly equal, partly criſped at the margin.—Native of the Cape. It flowered at Mr. Colville's nurſery in June 1802. The *leaves* are broad. *Flowers* blueiſh-white, with dark-blue marks and *anthers,* their ſcent like an oriental hyacinth, but finer. Mr. Dryander ſeems to have overlooked this ſpecies; unleſs, as we ſuppoſe, he included it under *plicata,* n. 8.

14. B. *mucronata.* Briſtle-pointed Babiana. Ker n. 11. (Gladiolus mucronatus; Jacq. Ic. Rar. t. 253. Coll. v. 4. 162. Willd. Sp. Pl. v. 1. 221. Vahl Enum. v. 2. 115. G. ringens; Thunb. Prodr. 186. Fl. Cap. v. 1. 214, excluding Jacquin's *ſulphureus.*)—Leaves elliptic-oblong, ſtalked, plaited, downy. Stalk branched. Throat of the corolla funnel-ſhaped, elongated; ſegments of the limb linear-obovate, three alternate ones awned; three lower reflexed.—Native of the Cape of Good Hope. The *leaves,* in Jacquin's figure, have ſtalks nearly of their own length. The *ſheaths,* like the whole herbage, are downy, and as long as the tube of the *corolla. Throat* rather ſhort, funnel-ſhaped as well as the *limb,* whoſe ſegments are very deep; linear and elongated at the baſe, pale yellow in that part, lilac towards the extremity; the central one of the upper lip largeſt; the two next awned, like the central one of the lower lip.

BACILLUM, (a little ſtick or ſtaff,) was once uſed by Acharius for the ſtalks elevating the tubercles of the Cup Lichens. (See LICHEN, ſect. 7.) This term occurs in his Prodromus, but is ſupplanted in his more recent publications by *Podetium.* Both terms appear to us ſuperfluous, *Pedicellus* having preciſely the ſame meaning.

BADKU, in *Geography.* See BAKU.

BÆOMYCES, in *Botany,* from βαιος, *ſmall,* and μυκης, *a fungus,* is well appropriated to this genus of *Lichenes,* their fructification looking exactly like ſome minute kinds of *Agaricus* or *Helvella.*—Perſoon in Uſt. Annal. faſc. 7. 19. Achar. Lichenogr. 108. t. 12. f. 1, 2. Syn. 279.—Claſs and order, *Cryptogamia Algæ.* Nat. Ord. *Lichenes.*

Eſſ. Ch. Tubercles ſolitary, on ſolid ſimple ſtalks, from an uninterrupted granulated cruſt.

In

In the *Methodus* of Acharius, this genus is so characterized as to include all the *Lichenes pyxidati*, as well as the *Cladoniæ*, of other authors. At present it is restricted to the first section of the original *Bæomyces*, consisting of four species only. The characters and synonyms of these are correctly given by our learned friend, except that of *Lichen ericetorum* of Linnæus, which we remove from this genus, on the authority of original specimens.

1. B. *roseus*. Rose-coloured Mushroom-Lichen. Pers. as above. Ach. n. 1. (Lichen Bæomyces; Linn. Suppl. 450. Ehrh. Phyt. n. 89. Sibth. Ox. 321. Engl. Bot. t. 374. Hoffm. Enum. 37. t. 8. f. 3. L. ericetorum; Web. Gott. 195. Lightf. 809, α. Fl. Dan. t. 1003. f. 2. Coralloides fungiforme carneum, basi leprosâ; Dill. Musc. 76. t. 14. f. 1.)—Crust glaucous-grey. Stalks very short, cylindrical. Tubercles tumid, lobed, rose-coloured. —Found on mountainous heaths, in broad uninterrupted patches on the ground, of a greenish or glaucous grey when fresh and moist, conforming to all the inequalities of the soil; the surface finely granulated. *Tubercles* from one to two or three lines in diameter, of a bright and most elegant rose colour, convex, more or less lobed, or irregularly tumid, each supported by a thick, round, solid *stalk*, about as high as the diameter of the head, white tinged with a blush of red. This is by far the most elegant, as well as the most rare, of our British species. Dr. Acharius here cites Engl. Bot. t. 372, which is his *Lecidea Icmadophila*, Syn. 45, the true *Lichen ericetorum* of Linn. Sp. Pl. 1608. Fl. Suec. 408. and Herb. Linn. Fl. Dan. t. 472. f. 4. Lichen Icmadophila; Linn. Suppl. 450. Ehrh. Phyt. n. 40. L. æruginosus; Jacq. Austr. t. 275.

2. B. *fungoides*. Pale Mushroom-Lichen. Ach. n. 2. ("B. helveloides; Bory Voy. 3." Lichen fungoides; Swartz Ind. Occ. 1886.)—Crust white. Stalks thrice as tall as the diameter of the pale flesh-coloured tubercles.—Gathered by Dr. Swartz on the gravelly soil of high mountains, in the southern part of Jamaica. Bory de St. Vincent found the same in the isle of Bourbon. We have specimens from Dr. Acharius. The *crust* is thin, hard, of a dirty white. *Stalks* white, thrice as tall as the foregoing; tumid at the base. *Heads* of a lighter flesh-colour, with a white powdery efflorescence.

3. B. *rufus*. Brownish Mushroom-Lichen. "Wahlenb. Lapp. 449." Ach. n. 3. (Lichen rufus; Hudf. 527. L. fungiformis; Web. Goett. 196. Sibth. Ox. 322. Hoffm. Enum. 38. t. 8. f. 2. L. byssoides; Linn. Mant. 133. Lightf. 809. Engl. Bot. t. 373. L. peltifer; Wulf. in Jacq. Coll. v. 3. 104. t. 3. f. 1. Coralloides fungiforme saxatile, pallide fuscum; Dill. Musc. 78. t. 14. f. 4.)

β. B. lignorum. Achar. (B. rupestris γ; Ach. Meth. 322.)

Crust greenish-white. Stalks short, somewhat compressed. Tubercles nearly globular, reddish-brown; sometimes aggregate.—Common on heathy ground, or on rocks, rarely on rotten wood; in which last situation the *tubercles* assume a darker brown. They are much smaller than in *B. roseus*, rounder and less lobed, though often clustered together; their colour is a dirty brick-red.

The variety β of Engl. Bot. figured in Raii Syn. t. 1. f. 3, not f. 4; and in Dill. Musc. t. 14. f. 5, is now esteemed a fungus. See ONYGENA.

4. B. *placophyllus*. Broad-leaved Mushroom-Lichen. "Wahlenb. Lapp. 449." Ach. n. 4. Meth. 323. t. 7. f. 4.—Crust orbicular, rugged, somewhat lobed and imbricated, glaucous-white. Stalks elevated, compressed. Tubercles convex, simple, reddish-brown.—Found by Wahlenberg, on the sterile sandy soil of Lower Lapland. We are obliged to Dr. Acharius for a specimen of this very curious species, whose crust approaches that of the true Cup Lichens, its circumference at least being lobed and almost leafy, though of a thick substance. The tubercles are altogether those of a *Bæomyces*.

BAGDAD, col. 4, l. 1, after terraces. Bagdad is still a place of great trade, and the resort of merchants from almost every quarter of the East. It supplies all Asia Minor, Syria, and part of Europe, with Indian commodities, which are imported at Bassora, brought in boats up the Tigris, and then transported by caravans to Tocat, Constantinople, Aleppo, Damascus, and the western parts of Persia. The chief imports from India are, gold brocade, cloths, sugar, pepper, tin, sandal-wood, iron, china-ware, spice, cutlery, arms, and broad-cloth; in return for which they send bullion, copper, gall-nuts, tamarisk, leather, and otto of roses. From Aleppo are imported European silk-stuffs, broad-cloths, steel, cochineal, gold thread, and several other European articles, which are brought in Greek vessels to Scanderoon. The imports from Persia are, shawls, carpets, silk, cotton, white cloth, leather, and saffron: and those from Constantinople are, bullion, furs, gold and silver thread, jewels, brocade, velvets, and otto of roses. The principal manufacture at this place is that of red and yellow leather, which is much esteemed; but silk and cotton stuffs are likewise made. The climate, notwithstanding its excessive heat, is allowed to be very healthy. But the natives are subject to a cutaneous disorder, for which no cure has yet been discovered: it appears in the form of a pimple, then degenerates into an ulcer, and at the end of eight or ten months dries up of itself, leaving a prominent mark. The inhabitants of Aleppo, and other towns in Syria, are subject to this disease. The military government of Bagdad is, &c.

BAGDAD, *Pachalic of*, extends in a N.W. direction from the mouth of the Shat-ul-Arab to the rocks of Merdin, and in an E. and W. line from the confines of Persia to the banks of the Khabour, which separates it from the pachalic of Orfa. It comprehends the whole of the ancient Babylonia, and the greatest part of Assyria Proper; that is, the space which is embraced by the Tigris and the Euphrates, and that which is beyond the Tigris, commonly called the lower Kurdistan. See BABYLONIA and ASSYRIA.

BAHAR. Add—The bahar of Acheen, in Sumatra, consists of 100 cattees, and is equal to 490 lbs. avoirdupois. The bahar of Betlefackee, in Arabia, consisting of 40 farcels, is = $815\frac{1}{4}$ lbs. avoirdupois. The bahar of Bencoolen = 560 lbs. avoirdupois. The bahar of Junkseylon of 8 capins = 485 lbs. 5 oz. $5\frac{1}{3}$ dr. The bahar of Malacca, of 3 peculs = 405 lbs. avoirdupois. The bahar of Mocha, of 15 franks = 445 lbs. avoirdupois.

BAHREIN, N. lat. 26° 43′.

BAJOCCO. Add—Rome exchanges with Amsterdam 42 bajocchi, more or less, for 1 florin banco; with Leghorn, 95 bajocchi, more or less, for 1 pezza of 8 reali. Rome keeps accounts in scudi. See SCUDO.

BAIRDSTOWN, l. 3, r. 821, 202 being slaves.

BAIT, WHITE. Add—See CLUPEÆ *Alosa*.

BAKERSFIELD. Add—It contains 812 inhabitants.

BAKU. Insert, or BADKU. N. lat. 42° 22′. Add—Baku is defended by a double wall and deep ditch, constructed during the reign of Peter the Great. This was once a celebrated city of the ancient worshippers of fire, and before the conquest of the Saracens was annually visited by thousands of pilgrims.

BALDIVIA, l. 7, r. W. long. 74°.

BALDWIN, in *Geography*, a town of America, in the district of Maine, and county of Cumberland, containing 546 inhabitants.

inhabitants.—Alſo, a county of Georgia, which, together with its town Milledgeville, contains 6356 inhabitants; the ſlaves in the county being 2324, and in the town 226.—Alſo, a county in the territory of Miſſiſſippi, having 1427 inhabitants, including 717 ſlaves.

BALFOURIA, in *Botany*, received its name from the pen of Mr. Brown, in honour of his illuſtrious countryman ſir Andrew Balfour, knight, founder of the Botanic Garden, as well as of the Public Muſeum, at Edinburgh. His friend, ſir Robert Sibbald, has embalmed his memory in the *Memoria Balfouriana;* nor could any one be more competent to this ſubject. Theſe diſtinguiſhed men firſt laid the foundation of the ſtudy of natural hiſtory in Scotland.—Brown Tr. of the Wern. Soc. v. 1. 70. Prodr. Nov. Holl. v. 1. 467.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. Br.

Eſſ. Ch. Corolla funnel-ſhaped; throat crowned with a ſmall crenate tube; ſegments of the limb ſtraight, equilateral. Stamens inſerted into the throat; anthers arrow-ſhaped, pointed, cohering with the ſtigma about the middle. Germen of two cells; ſtyle ſolitary, thread-ſhaped, dilated at the top; ſtigma angular. Scales ten at the baſe of the calyx, on the outſide of the corolla; none under the germen. *Follicles*......

1. B. *ſaligna*. Willow-leaved Balfouria. Br. n. 1.—Diſcovered by Mr. Brown, in the tropical part of New Holland. A *tree*, about twelve feet high, ſmooth. *Leaves* oppoſite, linear-lanceolate, falcate, with little teeth between the inſertion of their *footſtalks*. *Cymes* lateral as well as terminal, three-cleft.

BALK. Inſert—or BULKH. Col. 1, l. 3, after Bactriana, inſert—It was formerly included in Khoraſſan, and is bounded on the N.E. by the Oxus, E. by Koondooz, W. by Khoraſſan, and S.W. by the mountains of Huzara, and the independent ſtate of Mymuna. Col. 2, l. 17, after Perſians, add—The Tanjets, or the race of people who inhabit this country, beſides the Afghans and Uſbecks, are corrupt and diſſolute, and addicted to the moſt unnatural vices. The Uſbecks are ſimple, honeſt, and humane. Col. 2, l. 60, after Hindoſtan, add—It is ſaid to be as large as Delhi; but moſt of the houſes are uninhabited; and the population is ſaid to be reduced to between 6 and 7000 men, ſubject to the king of Cabul. The vicinity of the town is well cultivated, and corn and proviſions are abundant.

BALLABUAN, *r.* BALLAMBUAN, and remove to next column.

BALLISTIC PENDULUM, a pendulum uſed in aſcertaining the velocity, &c. of balls, the ſtrength of gunpowder, &c. &c. See GUNNERY, GUNPOWDER, and PENDULUM.

BALLOGISTAN, l. 10, *r.* Mekran. At the cloſe, add—Ballogiſtan, or, as it is otherwiſe called, Balouchiſtan, the country of the Balouches, is conſidered by ſome as a province diſtinct from Mekran or Mecran; and as ſuch properly commences at Koohinee (the hilly road) 25 miles N.E. of Bayla, or in N. lat. 26° 35′, from which place it extends to Nooſhky, 79 miles N.W. of Kelat, or in N. lat. 30°. It is ſaid to be a confuſed maſs of tremendous mountains, through which the road generally leads in water-courſes. Flocks of ſheep and herds of cattle are numerous in every part of this country, and it alſo produces great quantities of wheat. The territories of Mahomed Khan, chief of Balouchiſtan, comprehend all the countries lying between 20° 30′ and 30° N. lat., and from 65° to 69° E. long. It is divided into the two mountainous provinces of Ihalawan and Sarawan, the low country of Cutch Gandava to the E., and the provinces of Zuhree and Amund Dajul; to which may be added the ſmall diſtricts of Shat and Muſtung, lying N. of Kelat. See SARAWAN and MECRAN.

BALLOTADE, l. 5, *r.* theſe airs, &c.; l. 8, *r.* horſeman.

BALLS, CHAIN. For *chain-balls* r. *chain-bullets*.

BALLS, *Stang*, *dele*.

BALOUCHISTAN. See BALLOGISTAN.

BALSAMITA, in *Botany*, an old name, uſed by Dodonæus and others, alluding to the balſamic odour of the flowers and herbage, and their reputed ſtimulating healing qualities. It is revived by Profeſſor Desfontaines, who, after the example of Vaillant, has recently ſeparated the ſeveral ſpecies of this genus from *Cotula*, *Chryſanthemum*, and *Tanacetum*, into which they had been forced, though deſtitute of radiant, or female, florets, as well as of a crown to their ſeeds.—Desfont. Act. Soc. Hiſt. Nat. Pariſ. v. 1. 1. Willd. Sp. Pl. v. 3. 1800. Ait. Hort. Kew. v. 5. 519.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* flattiſh, imbricated; ſcales numerous, linear, convex, acute, the inner ones with a membranous margin. *Cor.* compound, uniform, tubular, longer than the calyx. Florets all perfect, numerous, funnel-ſhaped, equal; their limb in five regular, acute, ſpreading ſegments. *Stam.* in each floret, Filaments five, capillary; anthers united into a five-toothed tube, hardly longer than the tube of the corolla. *Piſt.* Germen roundiſh; ſtyle thread-ſhaped, longer than the corolla; ſtigmas two, revolute. *Peric.* none, except the permanent calyx. *Seeds* ſolitary to each floret, ſmall, oblong, ſtriated, ſometimes bordered with a narrow longitudinal membrane at one ſide, but abrupt at the ſummit, without any crown or wing. *Recept.* ſlightly convex, naked.

Eſſ. Ch. Receptacle naked. Seed-down none. Calyx imbricated.

1. B. *grandiflora*. Large-flowered Coſtmary. Desf. Act. Soc. Hiſt. Nat. Par. v. 1. 1. t. 1. Willd. n. 1. (Cotula grandis; Linn. Sp. Pl. 1257.)—Stem herbaceous, hairy, ſimple and ſingle-flowered. Leaves ſerrated; radical ones obovate; thoſe of the ſtem lanceolate; dilated and deeply toothed at their baſe.—Found by Desfontaines in corn-fields at Algiers, flowering in May. Linnæus had it from thence. A handſome biennial plant, conſpicuous for its large, yellow, cuſhion-like *flower*, about two inches broad, compoſed of innumerable crowded *florets*. The *ſtem* is two or three feet high, unbranched, leafy, and hairy. *Leaves* numerous, ſmooth; the radical ones ſtalked, two or three inches long.

2. B. *virgata*. Wand-branched Coſtmary. Desf. as above, 2. Willd. n. 2. Ait. n. 1. (Cotula grandis; Jacq. Obſ. faſc. 4. 4. t. 81. Chryſanthemum diſcoideum; Allion. Pedem. v. 1. 190. t. 11. f. 1.)—Stem herbaceous, ſmooth; branched at the baſe; branches ſingle-flowered. Leaves linear-lanceolate, ſerrated, nearly ſeſſile; upper ones linear, entire.—Native of Italy. This is the plant mentioned under his *Cotula grandis* by Linnæus, as having been ſent by Allioni. It is however, as he ſuſpected, very diſtinct from that plant; being much ſmaller in every part; the *ſtem* ſmooth and branched; *leaves* none of them ſpatulate, nor dilated and deeply cut at the baſe. *Flowers* ſimilar, but ſcarcely half ſo large, eſpecially thoſe of the lateral branches.

3. B. *ageratifolia*. Sharp-toothed Coſtmary. Desf. as above, 2. Willd. n. 3. Ait. n. 2. (Chryſanthemum floſculoſum; Linn. Sp. Pl. 1255. Bellis ſpinoſa; Alpin. Exot. 327. t. 326. B. major ſpinoſa, petalis carens; Moriſ. ſect. 6. t. 9. f. 16.)—Stem ſhrubby, branched at the baſe. Leaves obovate, ſharply ſerrated, crowded. Flowers corymboſe.—Native of Crete; an old green-houſe plant in England,

England, but not popular at prefent. The *branches* are rather loofely fpreading, fmooth, covered with fmooth *leaves*, an inch and a half long, whofe numerous teeth are fharp, and even fpinous. Several deep-yellow convex *flowers* compofe a corymbofe clufter at the extremity of the ftem or branch.

4. B. *vulgaris*. Common Coftmary. Willd. n. 4. (B. major; Desf. as above, 3. Dod. Pempt. 295. B. mas; Ger. Em. 648. Mentha græca; Matth. Valgr. v. 2. 75. Camer. Epit. 480. Tanacetum Balfamita; Linn. Sp. Pl. 1184.)—Stem herbaceous. Leaves ovate, ferrated; the lower ones ftalked; upper auricled. Flowers corymbofe.—Native of Tufcany, France, and Switzerland. A hardy old kitchen-garden herb, flowering in Auguft and September. *Root* perennial. *Stems* round, leafy, fomewhat branched, two feet high. *Leaves* hoary. *Flowers* numerous, fmall, yellowifh, accompanied with fmall leaves. The whole plant has a ftrong warm odour. Gerarde fpeaks of it as fometimes infufed in ale, for medicinal purpofes, but we know not of its being in ufe at prefent, though often kept in ruftic gardens.

BALTIMORE, l. 12, after contains, add—by the cenfus of 1810, 29,255; and for 5877 *r.* 6697.

Baltimore, col. 1, l. 9 from the bottom, add—By the cenfus of 1810, the number of inhabitants in the city of Baltimore was 35,583, including 3713 flaves; in the eaftern precincts 4050, comprehending 262 flaves; and in the weftern precincts 6922, including 697 flaves.

Baltimore, a town of Vermont, in the county of Windfor, having 207 inhabitants.

BAMBERG, col. 1, l. 19, add—Before it was fecularized in 1813, it contained a furface of 65 German miles, with a population of 192,000 fouls, and a revenue of 556,000 dollars. Col. 1, l. 24, after populous, add—containing about 2030 houfes, and 16,500 inhabitants.

BAMFF, col. 2, l. 31, infert—The burgh and parifh contained, in 1811, 3603 perfons; 1540 males, and 2063 females.

BAMFFSHIRE, col. 2, l. 4, *r.* in 1811, was 36,668 perfons; 16,465 males, and 20,203 females: 3815 families being employed in agriculture, and 2195 in trade, manufactures, and handicraft.

BAMPTON, l. 19, *r.* 1061 houfes, and 5864 inhabitants; 2882 males, and 2982 females.

BANBURY, l. *ult. r.* and the borough and parifh, by the returns of 1811, contained 582 houfes, and 2841 perfons; 1331 males, and 1510 females.

BAND, a weight ufed on the Gold Coaft for weighing gold duft, and equal to two ounces troy.

Band-*Fifh*. See Cepola.

BANDER-Abassi, *r.* Gambron.

BANGOR, col. 2, l. 37, *r.* the city and parifh, in 1811, contained 456 houfes, and 2383 inhabitants, *viz.* 1094 males, and 1289 females.

Bangor, in America, add—It contains 850 inhabitants.

BANK, Million. Add to diffolution—in 1796.

BANKSIA, in *Botany*, one of the moft magnificent and peculiar genera among the native plants of New Holland, was with great propriety dedicated to the honour of the illuftrious difcoverer of this genus, by the younger Linnæus. (See our former article Banksia, which requires correction, as embracing feveral fpecies not now included herein, but already defcribed in the prefent work under the articles Conchium and Xylomelum.) On the other hand, a much greater number of genuine *Bankfiæ*, firft made known by Mr. Brown, fince the publication of that original article, require to be added. We are at a lofs to account for the report concerning the fpecies with folitary flowers, at the end of that article. It may have had fome foundation which has efcaped the memory of the writer of this. The only Salisburia ever publifhed belongs to a totally different family, and may be found in its proper place. Thirty-one fpecies of *Bankfia* are defined by Mr. Brown, of which four only were known to Linnæus, from fpecimens and engravings communicated by fir Jofeph Banks.—Linn. Suppl. 15. Schreb. Gen. 79. Murr. in Linn. Syft. Veg. ed. 14. 161. Willd. Sp. Pl. v. 1. 535. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 213. Brown Tr. of Linn. Soc. v. 10. 202. Prodr. Nov. Holl. v. 1. 391. Juff. 79. Lamarck Illuftr. t. 54. f. 1, 2. Gærtn. t. 48.—Clafs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Proteaceæ*, Juff. Brown.

Gen. Ch. *Cal.* Catkin cylindrical, denfe, many-flowered; flowers in pairs, with three permanent fcales to each pair, two of which are interior, and fmalleft. *Cor.* of one petal, in four deep linear fegments, at length feparating entirely, fomewhat dilated and concave at the fummits, their points long cohering, till forced afunder by the growing ftyle. Nectary four fcales at the bafe of the germen. *Stam.* Filaments four, very fhort, inferted into the bafe of the cavity of each petal; anthers oblong. *Pift.* Germen fuperior, of two fingle-feeded cells, very fmall; ftyle cylindrical or angular, rigid, gradually curved, firmly held, for a long time, by the combined tips of the corolla; ftigma undivided. *Peric.* Follicle woody, firmly fixed in the receptacle, obovate, of two fhallow cells; the partition unconnected, rigid, elaftic, cloven by a deep tranfverfe fiffure at the top. *Seeds* folitary, compreffed, quite flat at the inner fide, wedge-fhaped, and extended into a rounded, membranous, terminal wing.

Eff. Ch. Corolla of one petal, four-cleft, bearing the ftamens in the hollows of its fegments. Nectary four fcales at the bafe of the germen. Follicle woody, of two fingle-feeded cells, with a cloven moveable partition. Catkin with three fcales to each pair of flowers.

Obf. The greater part of the very numerous flowers are neceffarily abortive, or there would not be room for the follicles to ripen.

The various fpecies, all natives of New Holland, are either fhrubs, or trees of no lofty ftature. The *branches* are umbellate; or in Linnæan language the *ftem* is "determinately branched," as in *Erica* and other *Bicornes*. *Leaves* fcattered, rarely whorled, fimple, undivided, either entire, ferrated, toothed, or cut in a pinnatifid manner; in a young plant they are often varioufly cut, or toothed, though undivided and entire on the fame when full grown. (*Brown.*) *Catkins* folitary, terminal, rarely lateral, cylindrical, in fome cafes very fhort. *Bracteas* feveral at the bafe of each catkin, fhort and narrow. *Catkin* when in fruit hard and heavy, its enlarged common *receptacle* firmly united with the bafes of the *follicles*, the furface briftly with remains of the *flowers*, and efpecially with the unimpregnated *ftyles* of the greater part, intermixed with the large, hard, ufually downy or hairy, *follicles*. *Seeds* black, with a brown, fhining, oblique *wing*, the convex fide of each filling a depreffion in the correfponding fide of the thin wooden *partition*.

Sect. 1. *Style longer than the corolla, projecting laterally, in a curved pofition, between its fegments, the ftigma being held faft, for fome time longer, between their points. Catkin, when in flower, cylindrical; when in fruit, laden with numerous tranfverfe follicles.* Thefe Mr. Brown confiders as true *Bankfiæ*. Indeed this fection embraces the whole genus, except one fpecies. We follow Mr. Brown's names and numbers.

1. B. *pulchella*. Small-flowered Bankfia. Ait. n. 1.—Leaves acerofe, entire, pointlefs. Tube of the corolla woolly;

woolly; limb smooth. Stigma capitate, depressed.—Native of dry heaths, near the sea-shore in Lewin's land, on the southern coast of New Holland, where it was found by Mr. Brown, and sent to Kew in 1805, but had not yet flowered there in 1810. The *leaves* are not longer than the finger-nail.

2. B. *sphærocarpa.* Round-fruited Banksia. Ait. n. 2.—Leaves acerose, entire, pointed. Corolla hairy all over, externally. Stigma awl-shaped. Cones globose. Follicles tumid, rather compressed at the summit.—Found on low heaths in Lewin's land. Sent to Kew by Mr. Peter Good, in 1803. The *leaves* are an inch long.

3. B. *nutans.* Nodding-flowered Banksia. Ait. n. 3.—Leaves acerose, entire, pointed. Catkins drooping. Corolla silky. Follicles dilated at the summit, depressed.—On dry heaths near the shore of Lewin's land, where, like the two former, it was gathered by Mr. Brown.

4. B. *ericifolia.* Heath-leaved Banksia. Linn. Suppl. 127. Willd. n. 7. Ait. n. 4. Banks Ic. Ined. apud Bibl. Linn. t. 4. Andr. Repos. t. 156. Curt. Mag. t. 738. Cavan. Ic. v. 6. 27. t. 538. (Banksia; White's Voy. 225. t. 22. f. 1.)—Leaves acerose, emarginate, with two teeth; entire at the edges. Catkins elongated. Corolla silky. Stigma capitate.—Native of the eastern coast of New Holland, on rocky heaths near Port Jackson, from whence it was sent by Dr. White, among the first botanical communications from that country, and is now in several green-houses, flowering at various times of the year. This species was however first discovered by sir Joseph Banks and Dr. Solander, in their celebrated voyage. The *stem* is three or four feet high. *Leaves* very numerous, the length of the nail, evergreen, smooth, revolute. *Flowers* bright yellow. *Catkins* five or six inches long. *Follicles* abrupt, rough with rusty, deciduous hairs.

5. B. *spinulosa.* Prickly-leaved Banksia. Sm. Bot. of New Holl. 13. t. 4. Willd. n. 6. Ait. n. 5. Andr. Repos. t. 457. Cavan. Ic. v. 6. 26. t. 537.—Leaves linear, revolute, with spinous teeth towards the end, and three terminal ones, the intermediate tooth longest. Corolla smooth internally at the base. Stigma awl-shaped.—Native of dry heaths about Port Jackson. Larger than the last. *Leaves* from one to three inches long; white beneath. *Corolla* yellow. Exposed part of the *styles* purple.

6. B. *collina.* Hill Banksia. Br. n. 6.—Leaves linear, with spinous teeth; veiny beneath; their terminal tooth shortest. Scales of the catkin obtuse, downy at the extremity. Corolla smooth internally at the base. Stem shrubby.—Gathered by Mr. Brown on dry open hills about Hunter's river, New South Wales.

7. B. *occidentalis.* West-coast Banksia. Ait. n. 6.—Leaves linear, with spinous teeth beyond the middle; veinless beneath. Scales of the catkin smooth at the extremity. Corolla withering; bearded internally at the base. Follicles tumid, downy; rather compressed and naked at the summit. Stem shrubby. Young branches smooth.—Found by Mr. Brown, in heathy ground, at Lewin's land.

8. B. *littoralis.* Sea-side Banksia. Ait. n. 7.—Leaves linear, elongated, with spinous teeth; veinless beneath; tapering at the base. Corolla deciduous. Follicles compressed, downy at the summit, as well as the scales of the catkin. Stem arboreous. Young branches downy.—Found by Mr. Brown on the sandy shores of creeks in Lewin's land. The *flowers* were past.

9. B. *marginata.* Various-leaved Banksia. Cavan. Ic. v. 6. 29. t. 544. Ait. n. 8.

β. B. microstachya; Cavan. Ic. v. 6. 28. t. 541, excluding the reference to B. dentata of Linnæus!

γ. Brown.

Leaves linear, abrupt, pointed, either entire or toothed, with scarce-visible veins beneath. Ultimate branches hairy. Scales of the catkin all smooth at the end; the larger ones acute. Stem shrubby.—Native of heaths, in the neighbourhood of Port Jackson, New South Wales. The *stem* is usually six feet high. *Leaves* generally entire, shorter than the *catkin*, scarcely exceeding two inches in length; their under side white and downy. *Flowers* orange-coloured. In variety β the *leaves* are bordered with spinous teeth, and less revolute, sometimes exceeding the length of the unusually small *catkins*. γ is a dwarf diffuse shrub, with flattish, wedge-shaped, spinous-toothed *leaves*, longer than the *catkins*. *Brown.*

10. B. *depressa.* Prostrate Banksia. Br. n. 10.—Leaves long-wedgeshaped, abrupt, pointed, spinous-toothed; slightly ribbed and veined beneath; rather longer than the catkins, all whose scales are downy and obtuse. Stem prostrate. Ultimate branches hairy.—Found by Mr. Brown, in stony ground at the roots of the mountains in Van Diemen's island, towards the south.

11. B. *patula.* Spreading Banksia. Br. n. 11.—Leaves linear, somewhat wedge-shaped, abrupt, pointed, very sparingly toothed; reticulated with veins beneath. Scales of the catkin downy at the summit and obtuse. Keel of the limb of the corolla smooth. Stem diffuse. Ultimate branches downy.—Discovered by Mr. Brown, in Flinders' land, on the south coast of New Holland, growing amongst other shrubs, in barren elevated spots.

12. B. *australis.* South-coast Banksia. Br. n. 12.—Leaves linear, abrupt, pointed, entire, revolute; reticulated with veins beneath. Ultimate branches downy. Scales of the catkin obtuse, nearly equal; downy at the summit. Keel of the limb of the corolla very slightly silky. Stem arboreous.—Observed by Mr. Brown, every where in the open fields of Van Diemen's island, as well as by the sea-side; and also on the south coast of New Holland, near Port Phillip.

13. B. *insularis.* Insular Banksia. Br. n. 13.—Leaves linear-oblong, or somewhat wedge-shaped, slightly rounded, pointed, either scattered or whorled; reticulated with veins beneath. Scales of the catkin obtuse, externally downy. Follicles compressed; smooth at the summit.—Native of the islands of the Bass strait, as well as of that of Van Diemen, near the shore. *Brown.*

14. B. *integrifolia.* Entire-leaved Banksia. Linn. Suppl. 127. Willd. n. 3. Ait. n. 9. Banks Ic. Ined. t. 3. Cavan. Ic. v. 6. 30. t. 546. (B. oleæfolia; Cavan. Ic. v. 6 30. t. 545. B. glauca; Cavan. Ic. v. 6. 31. B. spicata; Gærtn. t. 48.)—Leaves whorled, oblong-lanceolate, entire, pointed; reticulated with conspicuous veins beneath. Follicles downy. Stem arboreous.—Native of the east coast of New Holland, near the sea-shore at Port Jackson. This is generally a small, or middle-sized, *tree*. *Leaves* narrow-obovate, for the most part acute; tapering at the base; white beneath. The twin scales of the *catkin* obtuse; solitary one acute, and only half as large.

Mr. Brown says this is a very variable species, too nearly akin to the last, as well as to that immediately following. He observed on the south coast, near Port Phillip, a variety which forms a large *tree*, with lanceolate-oblong, mostly rather obtuse, *leaves*, acute at their base: the solitary scales of the *catkin* rather acute, but more than half the size of the twin ones.

15. B. *compar.* Doubtful Banksia. Br. n. 15.—Leaves scattered, oblong-tongueshaped, obtuse, pointless; veinless and snow-white beneath. Branches, and scales of the catkin, downy. Corolla silky. Stem arboreous.—Found by Mr.

Mr. Brown, but not in fruit, by the sea-side at Keppel Bay, on the east coast of New Holland. He suspects it to be a variety of the last.

16. B. *verticillata*. Whorled Banksia. Ait. n. 10.—Leaves whorled, oblong-tongueshaped, obtuse, pointless; veinless and snow-white beneath. Scales of the catkin downy, obtuse. Bracteas at the base hairy. Stem arboreous.—Gathered by Mr. Brown, in Lewin's land, near the sea-side. Mr. Menzies also met with this species on the south-west coast of New Holland.

17. B. *coccinea*. Scarlet-flowered Banksia. Ait. n. 11.—Leaves alternate, wedgeshaped-obovate or oblong, toothed, abrupt, ribbed, reticulated with veins; transverse at the base. Scales of the catkin awl-shaped. Corolla woolly. Stigma pyramidal.—Found by Mr. Brown in Lewin's land, in fields near the coast. It was sent to Kew, by Mr. Good, in 1803.

18. B. *paludosa*. Marsh Banksia. Ait. n. 12.—Leaves imperfectly whorled, wedgeshaped-oblong, somewhat abrupt; tapering at the base; slightly revolute; coarsely serrated beyond the middle; ribbed and reticulated with veins beneath. Footstalks and young branches smooth. Corolla silky. Stem shrubby.—Gathered by Mr. Brown, in marshy ground, near Port Jackson. It is said to flower in the green-house at Kew, from January to March.

19. B. *oblongifolia*. Oblong-leaved Banksia. Cavan. Ic. v. 6. 28. t. 542. Ait. n. 13. (B. salicifolia; Cavan. Ic. v. 6. 31?)—Leaves scattered, narrow-oblong, abrupt, strongly serrated; rather acute at the base; ribbed, and reticulated with veins, beneath. Footstalks and young branches downy. Larger scales of the catkin pointed. Corolla silky. Stem shrubby.—Seen by Mr. Brown on heaths near Port Jackson. The *leaves*, according to his observations, are sometimes entire, or nearly so, (as we judge in this case from the word *integra*,) and therefore may answer to the *salicifolia* of Cavanilles, of which it is difficult to judge precisely, for want of a figure.

20. B. *latifolia*. Broad-leaved Banksia. Br. n. 20. Ait. n. 14. (B. robur; Cavan. Ic. v. 6. 29. t. 543.)—Leaves obovate-oblong, with spinous serratures; acute at the base; ribbed, reticulated, downy and grey beneath. Tube of the corolla silky; limb smooth. Stem shrubby.—Observed by Mr. Brown, in boggy situations near Port Jackson; plentiful about the town of Sydney, where it rarely ripens seed. That accurate botanist informs us the *stem* is usually three or four feet high, scarcely ever six feet. Louis Née, from whom Cavanilles had his information, appears to have accidentally confounded his specimens of this species, with his memorandums relating to *B. serrata*, and hence it is described of the size of an Oak, to which the name *robur* alluding, was necessarily obliged to be changed.

21. B. *marcescens*. Short-leaved Banksia. Br. n. 21. Ait. n. 15. (B. præmorsa; Andr. Repos. t. 258.)—Leaves wedge-shaped, flat, scattered, abrupt, strongly serrated more than half way down; rather acute at the base. Branches downy. Corolla permanent, smooth as well as the follicles.—Native of the southern coast of New Holland; at Lewin's land, near the shore. Mr. Andrews says this species was first raised from seed at Kew, in 1788. Mr. Brown and Mr. Aiton, on the contrary, mark it as introduced in 1794, by its first discoverer Mr. Menzies. The *stem* is six or seven feet high in the green-house. *Leaves* so abrupt, that we could almost have allowed the name *præmorsa* to remain. *Flowers* purple, in large handsome *catkins;* inside of the *corolla* white.

22. B. *attenuata*. Smooth-flowered Banksia. Ait. n. 16.—Leaves elongated and nearly linear, abrupt; tapering at the base; serrated more than half way down; ribbed and reticulated, with downy interstices, beneath. Scales of the catkin hairy at the summit. Corolla smooth. Follicles downy.—This also was discovered by Mr. Menzies, on the southern coast of New Holland; and seen by Mr. Brown in Lewin's land, near the sea-coast. It was raised at Kew, in 1794, but appears not yet to have flowered; nor have we heard of the plant elsewhere.

23. B. *elatior*. Tall Banksia. Br. n. 23.—Leaves elongated and nearly linear, serrated, rather abrupt; reticulated, and almost smooth when full grown, beneath. Scales of the catkin beardless, but, like the corolla, downy. Style quite smooth. Stigma oval-clubshaped. Stem arboreous.—Discovered by Mr. Brown, on the east coast of New Holland, by the sea-side, at Sandy Cape.

24. B. *serrata*. Great Serrated Banksia. Linn. Suppl. 126. Willd. n. 1. Ait. n. 17. Banks Ic. Ined. t. 2. White's Voy. 222. t. 18, 19, 20. Andr. Repos. t. 82. Cavan. Ic. v. 6. 27. t. 540. (B. conchifera; Gærtn. t. 48.)—Leaves linear-oblong, abrupt, rather bluntly serrated; reticulated and nearly smooth beneath; tapering at the base. Lower part of the style downy and powdery. Stigma cylindrical, furrowed; obliquely swelling at the base. Stem arboreous.—Native of the east coast of New Holland, at Port Jackson, in fields near the sea, from whence specimens were brought by sir Joseph Banks; but the plant was first raised in England, by Messrs. Lee and Kennedy, in 1788. This is described as the most stately of its genus, rising to the height of thirty feet, with a hard reddish wood. The *leaves* are near a span long, almost perfectly smooth on both sides, not so deeply serrated as in the figures of Andrews or Cavanilles, or in White's t. 20, but rather bordered with a series of rectangular bluntish notches. *Catkins* large, thick and heavy, of innumerable downy *flowers*, whose *corolla* is purplish, and *style* crimson. *Cone* ten inches long, very heavy. *Follicles* downy, an inch in diameter. Gærtner's figure is from a poor diminutive cone.

25. B. *æmula*. Large-fruited Banksia. Br. n. 25.—Leaves linear-oblong, abrupt, deeply and sharply serrated; reticulated and nearly smooth beneath. Corolla silky. Stigma capitate, polished, pyramidal, not furrowed, twice as thick as the style. Stem shrubby.—Native of heaths, and sandy fields, near Port Jackson, from whence we long ago received specimens, with full-grown *fruit*, by the kindness of Dr. White. We have been used to call this species *B. macrocarpa*, a name well expressing its singularly large *follicles*, which are twice the dimensions of the preceding, though the whole *cone* is usually much shorter. It is impossible to mistake Mr. Brown's faithful specific definition, especially the character of the short pyramidal *stigma*. The *leaves* are much smaller than those of *B. serrata*, though their serratures are much deeper and sharper. Hence Mr. Brown was led to apply t. 20 of White's Voyage to the present species, with which the *leaves* in that figure pretty nearly agree; but the *cone* certainly, to our knowledge, belongs to the *serrata*, which it well expresses, except being too small. The serratures in Mr. Andrews's plate of *serrata* most nearly approach our present plant. The shape and proportion of the *catkin* moreover best agrees herewith.

26. B. *dentata*. Broad-toothed Banksia. Linn. Suppl. 127. Willd. n. 5. Banks Ic. Ined. t. 5.—Leaves wedge-shaped-oblong, abrupt, sinuated and wavy, with broad spinous teeth; contracted at the base; snow-white, ribbed, and finely veiny, beneath. Corolla silky. Capsules downy.—Discovered by sir Joseph Banks and Dr. Solander, near Endeavour river, in the tropical part of New Holland. Mr. Brown also met with this noble species, which as yet is a

stranger

ftranger to our gardens, at Arnhem's land, on the northern coaft. Of the height or fize of the plant we are not informed. The *branches* are rufty and fomewhat downy. *Leaves* alternate, from a fpan to a foot long, on fhort ftalks; their margins remarkably undulated, and bordered with broad, fhallow, fpinous-pointed teeth. *Catkins* fix inches long, more flender than ufual; their fcales downy, the larger one to each pair of *flowers* fpinous-pointed.

27. B. *quercifolia*. Oak-leaved Bankfia. Ait. n. 18.—Leaves oblong-wedgefhaped, rather abrupt, fmooth, deeply ferrated, pointed. Segments of the corolla awned. Follicles nearly fmooth.—Found by Mr. Brown, in fields near the fhore, in Lewin's land. The awns of the *corolla* are indicated by him as a very remarkable character.

28. B. *fpeciofa*. Long-leaved Bankfia. Ait. n. 19.—Leaves linear, pinnatifid; lobes triangular-halfovate, pointed; fnow-white and flightly ribbed beneath. Limb of the corolla woolly. Style rather hairy. Follicles downy.—Native of the rocky fea-fhore of Lewin's land, where it was found by Mr. Brown, and fent to Kew, with the laft, in 1805.

29. B. *grandis*. Great Winged Bankfia. Willd. n. 2. Br. n. 29. Ait. n. 20.—Leaves deeply pinnatifid; lobes triangular-ovate, acute, flat; many-ribbed, and nearly fmooth, beneath. Corolla and follicles fmooth.—Gathered by Mr. Menzies, at King George's found, on the weft coaft of New Holland. Mr. Brown met with the fame on rocky hills in Lewin's land. Seeds were fent to Kew in 1794, where this magnificent fhrub thrives well, in the green-houfe, but has not yet flowered. Willdenow's fpecific name alludes, we prefume, to the *foliage*, and not to the *flowers*, with which he was not acquainted. The *leaves* are twelve or fourteen inches long, pinnatifid to the very rib; abrupt at the extremity; lobes numerous, more or lefs alternate, crowded, tranfverfe, coriaceous, entire, rather fpinous-pointed; roughifh to the touch on the upper fide; paler underneath, furnifhed with five principal ribs, and many intermediate veiny reticulations; they diminifh gradually towards the top, and efpecially towards the bafe, of the leaf. We have feen no *flowers* nor *fruit*.

30. B. *repens*. Creeping Bankfia. Labill. Voy. v. 1. 412. t. 23. Br. n. 30. Ait. n. 21.—Leaves pinnatifid; lobes finuated or toothed. Stem proftrate.—Found by Labillardiere, on calcareous rocks on the fouth-weft coaft of New Holland, where alfo Mr. Brown met with this fpecies. It flowers there in December. The creeping *ftem* is clothed with rufty down. *Leaves* a fpan long, ftalked, erect, deeply pinnatifid, but not quite to the rib, which is winged nearly all its length: they are downy when young, but finally very fmooth. *Catkins* ovate, nearly feffile, erect, denfe, many-flowered, about three inches long. *Corolla* and *germen* hairy.

Sect. 2. *Points of the corolla more fpeedily feparating; the narrow part of their fegments cohering longitudinally, and as long as the ftyle. Catkin fhort and level-topped, perfecting fcarcely more than one vertical follicle.*

31. B. *ilicifolia*. Holly-leaved Bankfia. Br. n. 31.—Leaves wedge-fhaped, deeply ferrated; nearly fmooth beneath. Catkins very fhort.—Gathered by Mr. Brown, in fields and hilly ground near the fea-coaft, in Lewin's land. This fpecies is fo fingular, that its learned difcoverer appears to have been inclined to make it a diftinct genus, by the name of *Ifoftylis*. He remarks that it forms a connecting link between *Bankfia* and DRYANDRA; fee the latter hereafter.

BANNIUM, in *Ancient Geography*, a Roman ftation, called Gaer, or Caer Bannau, fituated about three miles above the town of Brecknock, in South Wales, near the confluence of the rivers Yakin and Ufk. The camp is a parallelogram, 624 feet by 456, having its longeft parallels in a direction nearly S. and N. The foundation of the wall that encompaffed this area remains ftill entire, and may be traced through the underwood that has overgrown and concealed it. In this ftation there is a caufeway, fuppofed to have been a branch of the great Roman caufeway leading from Caerleon, in Monmouthfhire, through the vale of Ufk, and the eaftern part of Brecknockfhire to Ariconium, which is the 12th Iter in Antonine's Itinerary.

BANQUETTE. Add—See BREAST-WORK.

BANTAM, col. 1, l. 50, after fettled there, infert—That of the Englifh was eftablifhed in 1601, and maintained until 1683. That of the Dutch was erected in the year 1595, and this was their firft fettlement in the Spice iflands, which had been firft vifited by the Portuguefe in 1510. The Englifh made no attempt to recover a free port in Java until the year 1811, when Holland became a province of France, and the Dutch colonies were induced to accept the protection of Great Britain.—Col. 3, at the clofe of Bantam, add—Raffles's Hiftory of Java, 2 vols. 4to. 1817.

BAPTISIA, in *Botany*, fo called by the late M. Ventenat, from βαπτω, *to colour by immerfion, to dye*, becaufe a tincture of the leaves, of fome of the fpecies, is faid to be fcarcely inferior, in that refpect, to Indigo.—Venten. Decas Gener. Novor. 9. Brown in Ait. Hort. Kew. v. 3. 5. (Podalyria; Michaux Boreal.-Amer. v. 1. 263. Purfh 307. Lamarck Illuftr. t. 327. f. 1.)—Clafs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-fhaped, permanent, cut half way down into four or five fegments, forming two lips; its bafe externally convex. *Cor.* papilionaceous, of five petals. Standard inverfely-heartfhaped, reflexed at the fides, with a thick claw. Wings two, nearly as long as the ftandard, half-obovate, converging at their upper edges. Keel as long as the wings, of two oblong converging petals. *Stam.* Filaments ten, awl-fhaped, afcending, equal, inferted into the bafe of the calyx, deciduous; anthers roundifh, two-lobed. *Pift.* Germen fuperior, ftalked, ovate or elliptical; ftyle longer than the ftamens, afcending; ftigma capitate, hemifpherical. *Peric.* Legume on a ftalk longer than the calyx, elliptic-oblong, turgid, membranous, of one cell. *Seeds* numerous, elliptical, ftalked.

Eff. Ch. Calyx two-lipped, divided half way down into four or five fegments. Corolla papilionaceous; petals all nearly of equal length; ftandard reflexed at the fides. Stamens diftinct, deciduous. Legume inflated, ftalked, with many feeds.

To this genus we have already adverted, under the article PODALYRIA, as comprifing the North American fpecies of that genus, as it ftands in Lamarck and Willdenow. They are doubtlefs fufficiently marked by the above characters, to form a genus by themfelves. They are herbaceous, perennial, many of them glaucous, and have moftly the quality of dyeing blue. *Leaves* ternate, except the firft, with a pair of rather large *ftipulas*. *Flowers* moftly racemofe, with fmall partial *bracteas*; their colour blue, white, or yellow.

1. B. *perfoliata*. Perfoliate Wild Indigo. Ait. n. 1. (Rafnia perfoliata; Willd. Sp. Pl. v. 3. 949. Podalyria perfoliata; Purfh n. 1. Crotalaria perfoliata; Linn. Sp. Pl. 1003. Sm. Inf. of Georgia, v. 2. 133. t. 67. C. perfoliatæ folio; Dill. Elth. 122. t. 102.)—Leaves fimple, perfoliate, roundifh, entire. Flowers axillary, folitary.—Native of Carolina and Georgia, in dry barren fields, flowering

flowering in July. The whole plant is very smooth, scarcely glaucous, two or three feet high, distinguished by its perfoliate, almost orbicular *leaves*, about two inches broad, accompanied by lemon-coloured *flowers*, on short simple stalks. *Legume* nearly globular.

2. B. *uniflora*. Downy Single-flowered Wild Indigo. (Podalyria uniflora; Michaux Boreal.-Amer. v. 1. 263. Pursh n. 2. Sophora lanceolata; Walt. Carol. 135.)—Leaves ternate, sessile, downy; leaflets lanceolate, obtuse. Stipulas bristle-shaped, minute. Flowers axillary, solitary.—Observed by Michaux in Carolina and Georgia. The whole herbage is downy, as well as the *calyx*. *Flowers* stalked, yellow.

3. B. *villosa*. Downy Clustered Wild Indigo. (Podalyria villosa; Michaux ibid. 261. Pursh n. 3. Sophora villosa; Walt. Carol. 134.)—Leaves ternate, nearly sessile, downy beneath; leaflets elliptic-oblong, obtuse. Stipulas linear. Cluster terminal, dense. Calyx four-cleft.—In low sandy grounds of Virginia and North Carolina, flowering in June and July. Resembles a Lupine very much. *Flowers* yellow. *Pursh*. Michaux says the *flowers* are pale, nearly sessile; Walter calls them "*cinerei*."

4. B. *australis*. Blue-flowered Wild Indigo. Ait. n. 2. (Podalyria australis; Willd. Sp. Pl. v. 2. 503. Venten. Hort. Cels. t. 56. P. cærulea; Mich. ibid. 264. Pursh n. 4. Sophora australis; Linn. Syst. Veg. ed. 13. 325. Mant. 378. Curt. Mag. t. 509. S. cærulea; "Trew Pl. Rar. 6. t. 14.")—Leaves ternate, stalked, smooth; leaflets lanceolate, somewhat wedge-shaped. Stipulas lanceolate, longer than the footstalk.—On the banks of rivers in Virginia and Carolina, particularly in the western districts, flowering in June and July. *Pursh*. A hardy perennial in our gardens, about two feet high, smooth in every part, of a fine glaucous-green, with erect *clusters* of large handsome blue *flowers;* the standard and wings striped with a darker blue; the keel white.

5. B. *alba*. White-flowered Wild Indigo. Ait. n. 4. (Podalyria alba; Willd. Sp. Pl. v. 2. 503. Mich. ibid. 264. Pursh n. 5. Curt. Mag. t. 1177. Sophora alba; Linn. Syst. Veg. ed. 13. 325. Crotalaria alba; Linn. Sp. Pl. 1006. Anonis caroliniana perennis, non spinosa, &c. Mart. Cent. t. 44.)—Leaves ternate, stalked, smooth; leaflets elliptic-oblong. Stipulas awl-shaped, shorter than the footstalk, deciduous. Germen smooth.—In the western parts of Virginia and Carolina, on the banks of rivers, flowering in June and July. *Pursh*. Hardy in our gardens, but not of frequent occurrence. Catesby first introduced it in 1724. The habit of this species, its smoothness, and rather glaucous hue, agree with the last, to which it is certainly most nearly allied; but the *leaflets* are elliptical, the *flowers* white, more oblong, in consequence of the greater length of the wings and keel, the *stipulas* smaller and deciduous. The *corolla* is here and there spotted with brown, and is reported to be sometimes blue. Some of the *flowers*, in both these species, are often whorled, and give the *cluster* an interrupted form, like that of a Lupine, the aspect of which genus is otherwise visible in these plants.

6. B. *mollis*. Soft Wild Indigo. (Podalyria mollis; Mich. ibid. 264. Pursh n. 6.)—"Herbage and calyx minutely downy. Leaves ternate; leaflets lanceolate, slightly rhomboid. Stipulas lanceolate, leafy. Cluster spiked, terminal. Teeth of the calyx acute."—Found by Michaux in the county of Mecklenburg, Upper Carolina. Perennial. *Flowers* deep yellow. *Michaux*.

7. B. *tinctoria*. Common Wild Indigo. Ait. n. 3. (Podalyria tinctoria; Willd. Sp. Pl. v. 2. 503. Mich. ibid. 265. Pursh n. 7. Lamarck f. 1. Curt. Mag. t. 1099. Sophora tinctoria; Linn. Sp. Pl. 534. Cytisus procumbens americanus, flore luteo, ramosissimus, qui Anil suppeditat apud Barbadensium colonos; Pluk. Phyt. t. 86. f. 2.)—Leaves ternate, somewhat stalked, smooth; leaflets roundish-obovate. Stipulas setaceous, obsolete. Flowers racemose.—In woods on dry hills, from Canada to Carolina, flowering in July and August. Called Wild Indigo. *Pursh*. A low, partly procumbent, smooth plant, whose numerous branches are each terminated by a simple cluster of yellow *flowers*, about half the size of *B. australis*. The *pods* are ovate, on stalks much longer than the permanent *calyx*. This species is said to have been cultivated for Indigo, in the North American settlements, and even in Barbadoes, before the true *Indigofera* was introduced. It is tolerably hardy with us, in a dry soil and sheltered situation, but has nothing to recommend it for general cultivation.

BAR, in *Heraldry*, *r. Plate* III.

Bar, *Trial at*. See Jury.

BARACKS, col. 2, add—See Caserns.

BARAQUICIMITO, *dele* lat. and long., and add—See Barquisimeto.

BARBAREA, in *Botany*, a name used by Dodonæus, because this plant had been called the Herb of St. Barbara by some preceding botanists. It has always been referred to Erysimum, (see that article,) till Mr. Brown raised it to the rank of a separate genus, under the above appellation, in Ait. Hort. Kew. v. 3. 109.—Class and order, *Tetradynamia Siliquosa*. Nat. Ord. *Siliquosæ*, Linn. *Cruciferæ*, Juss.

Ess. Ch. Pod quadrangular, compressed. Cotyledons accumbent. Seeds in a single row. Calyx erect. Glands between the shorter stamens and the germen.

Two species only are described.

1. B. *vulgaris*. (Erysimum Barbarea; Linn. Sp. Pl. 922. Sm. Fl. Brit. 706. Fl. Dan. t. 985.) See Erysimum, n. 2.

2. B. *præcox*. See the same article, n. 3.

Mr. Brown thus defines Erysimum.

Ess. Ch. Pod quadrangular. Seeds without a border. Cotyledons incumbent. Stigma capitate; sometimes emarginate, with spreading lobes. Calyx closed.

We have explained the terms *accumbent* and *incumbent*, as thus technically used, under the article Tetradynamia, where a more particular account is given of our ingenious friend's arduous undertaking, of reforming the genera of the natural order in question.

BARBAREEN. See Caltura.

BARBET, in *Fortification*. See Battery.

BARBOURSVILLE, in *Geography*, a town of Kentucky, in Knox county, containing 55 inhabitants, eight of whom are slaves.

BARBULA, in *Botany*, so called by Hedwig, in allusion to the beard-like *fringe* of the *capsule*. See Tortula.

BARDSTOWN. Add—See Beardstown.

BARETTI, col. 2, l. 27, for Burke *r.* Bowle.

BARILLA. Add—See Carbonate *of Soda*.

BARIUM, in *Chemistry*, the metallic base of barytes. (See Barytes, *infra*.) Dr. Clarke has lately proposed the name of *Plutonium* for this metal.

BARK-Pit, col. 4, l. 19, for *Gardening* r. *Bark-beds*, &c.

BARKHAMPSTEAD, in *Geography*, a town of Litchfield county, in Connecticut, having 1506 inhabitants.

BARKWAY, l. *ult. r.* Its houses in 1811 amounted to 99, and its inhabitants to 686.

BARLEY, Caustic *Indian*, &c. *dele*.

BARNARD, in *Geography*, l. 2, for 673 *r.* 1648.

Barnard-*Castle*, l. *ult.* for 310 *r.* 450; and for 2966 *r.* 2986; add—1312 being males, and 1674 females.

BARNET,

BARNET, l. *ult.* *r.* parifh are 259 houfes, inhabited by 1579 perfons; 755 males, and 824 females.

BARNET, in America, for 477 *r.* 1301.

BARNSTAPLE. At the clofe *r.* in the borough and parifh is ftated by the return in 1811 to be 628, and of perfons 4019, *viz.* 1633 males, and 2386 females.

BARNSTAPLE, or *Barnftable*, American county, l. 6, *r.* 22,211. Do. col. 2, l. 25, for 2610 *r.* 3646.

BARNWELL, a diftrict of South Carolina, containing 12,280 inhabitants, including 4153 flaves.

BAROMETER, col. 7, l. 17, *r.* 68-hundredth parts of, &c. Col. 14, l. 40, add—We obferve, however, that it is merely a floating manometer, and as fuch more influenced by the temperature than the denfity of the atmofphere, and therefore not to be fo much depended upon as to warrant the high commendation above given to it. Col. 68, l. 36, *r.* 42 — 32. Col. 69, l. 6 from bottom *r.* $\frac{29.4 + 25.19}{2}$.

BARON, col. 1, l. 21 from bottom, for *Minerva* r. *Minever*.

BARQUISIMETO, in *Geography*, a city of America, in the government of Caraccas, 40 leagues W.S.W. of Caraccas, 150 leagues N.N.E. of Santa Fé, and 15 leagues from Tocuyo. N. lat. 9° 45′. The exceffive heat is rendered fupportable by the cooling breeze arifing from its elevated fituation. The adjacent plains are covered with excellent pafturage favourable for rearing every marketable animal. The fugar-cane and the beft wheat are alfo cultivated. The vales produce excellent cacao; and the fides of the hills are devoted to the culture of coffee. This city accommodates 11,300 perfons; its houfes are well built, and the ftreets are fo laid out as to afford a free circulation of air. It has a parifh-church and two officiating priefts, a monaftery of Francifcans, and a hofpital badly attended.

BARRE′, a townfhip of America, l. 2, *r.* 1971; l. 11, add—having 1053 inhabitants.—Alfo, a town of Vermont, in Orange county, having 1669 inhabitants.

BARREL. By 43 Geo. III. c. 69. every 36 gallons of beer or ale brewed by the common brewers in Great Britain, taken according to the ftandard of the ale quart, four thereof to the gallon, in the exchequer, fhall be reckoned by the gauger or other officer of excife for a barrel of beer or ale.

BARREL, a weight by which corn is fold in Ireland. The barrel of wheat, peas, beans, and rye, is 20 ftone: of barley, bere, and rape-feed, 16 ftone; of oats 14, and in fome places 12 ftone; of malt, 12 ftone: the ftone being 14 lbs. avoirdupois weight. A barrel of good wheat anfwers to about four Winchefter bufhels.

BARREN FLOWERS, in *Botany* and *Vegetable Phyfiology*, *Flores mafculi* in Linnæan terminology, are fuch as are not provided with organs for the formation of fruit or feed, but only with *ftamens* for its impregnation. See FECUNDATION *of Plants*.

BARRIER, in *Fortification*. Add—See CHEVAL *de Frife*, HERISON, KLINKETS, and TURNSTILE.

BARRILE, plur. BARRILI, a liquid meafure in Italy.

BARRIN, in *Geography*, a county of the diftrict of Kentucky, containing 11,942 inhabitants, of whom 1656 are flaves. The town, Glafgow, has 244 inhabitants, of whom 68 are flaves.

BARRINGTON, a townfhip in Strafford county, &c. l. 3, for 2470 *r.* 3564. Id. l. 5, for 683 *r.* 604. Id. l. 2, for 1373 *r.* 1784.

BARRIQUE, a meafure for wine and brandy in fome parts of France, as at Bourdeaux, Rochelle, &c. At Bourdeaux, a tonneau of wine contains 4 barriques or hogfheads = 50 ftekans in Amfterdam, 259 ftubgen in Hamburgh, or 243 Englifh gallons; and weighs with the wood about 2000 lbs. of Bourdeaux. The barrique contains 110 pots, or 32 veltes.

BARRY-BENDY, &c. *Plate* III. *Heraldry*, &c.

BART, in Lancafter county, add—It contains 1099 inhabitants.

BARTHELEMY, a river of Louifiana, which rifes near the Arkanfas, and after a courfe generally from N. to S. of 100 miles, falls into Ouachitta, 3 miles below the Derbane, on the contrary fide.

BARTHOLINA, in *Botany*, a genus of the *Orchis* family eftablifhed by Mr. Brown, and dedicated by him to the memory of the great Danifh anatomift and phyfiologift, THOMAS BARTHOLIN, whofe life is already given in its proper place, and whofe various writings relating to plants, in the old Copenhagen Tranfactions, entitle us to adorn the hiftory of our fcience with his truly illuftrious name.—Brown in Ait. Hort. Kew. v. 5. 194.—Clafs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth fuperior, of one leaf, tubular at the bafe, deeply divided above into three, elliptic-oblong, equal, ribbed, fpreading fegments, externally hairy. *Cor.* Petals two, linear-lanceolate, erect, fmooth, taper-pointed, nearly twice the length of the calyx. Nectary a large fpreading lip, united to the bafe of the petals, thrice the length of the calyx, in three deep principal lobes, the middle one broadeft, all divided, more than half way down, into many linear, fringe-like fegments, and terminating behind in a tumid, curved, bluntly-pointed fpur, rather longer than the tube of the calyx. *Stam.* Anther pointed, of two oblong, rather diftant, parallel cells, opening in front, attached to the two margins of the ftyle; maffes of pollen each fupported on a long, membranous-bordered ftalk, to which their cells are laterally attached, "their glands diftinct, half covered by the exterior lobe." *Pift.* Germen inferior, elliptic-oblong, curved, very hairy; ftyle flattened, much fhorter than the calyx; ftigma a cavity between the lobes of the anther. *Peric.* Capfule......

Eff. Ch. Calyx tubular at the bafe. Petals united to the bafe of the lip, whofe fpur is fhorter than the germen. Stalks of the pollen elongated; their cells laterally fixed; "glands diftinct, half covered by the exterior lobe."

1. B. *pectinata*. Fringed Bartholina. Ait. n. 1. (Orchis Burmanniana; Linn. Sp. Pl. 1334. Am. Acad. v. 6. 108. "Swartz in Web. and Mohr Archiv. v. 1. 55. t. 3." O. pectinata; Thunb. Prodr. 4. Fl. Cap. v. 1. 45. Willd. Sp. Pl. v. 4. 11. Arethufa ciliaris; Linn. Suppl. 405.)—Gathered by Thunberg and Sparrmann, on the fides of hills at the Cape of Good Hope, in Roode Sand, as well as near Cape Town, flowering from October to December. The *root* confifts of two ovate hairy knobs, the fize of a horfe-bean. *Leaf* folitary, radical, orbicular, clafping the flower-ftalk, an inch broad, horizontal, flefhy; fmooth, and of a fine green, on the upper fide; paler and veiny beneath; the margin reflexed, and very denfely fringed. *Flower-ftalk* folitary, fimple, fingle-flowered, five or fix inches high, erect, hairy, with a folitary, funnel-fhaped, hairy *bractea*, half an inch long, near the top. *Flower* large, of a very fingular afpect. *Calyx* green, converging, ftrongly ribbed, and externally hairy, near an inch long, its tube included. *Petals* whitifh, with a blue mid-rib, and a ftripe of the fame colour in their lower part. *Lip* two inches in length and breadth, fpreading, finely cut; its fegments white above, blue underneath, the throat dotted and minutely ftreaked with

with blue. *Spur* greenifh-white. Maffes of *pollen*, (which Linnæus in the *Supplement* has defcribed as a pair of ftyles,) inferted into the bafe of the ftyle, yellowifh, prominent, very confpicuous even in dried fpecimens.

BARTLET, a town of America, in Coos, &c. *r.* 436.

BARTON, in Orleans county, &c. add—it contains 447 inhabitants.

BARTON-*upon-Humber*, l. *ult.* for 412 *r.* 191—for 1709 *r.* 1129. The parifh of Barton, St. Mary, has 209 houfes and 976 perfons; and the parifh of St. Peter has 260 houfes, and 1228 perfons.

BARTONIA, in *Botany*, received that name from Dr. Sims, in 1812, in juft commemoration of the fcientific merits and zeal of Dr. Benjamin Smith Barton, at that time profeffor of botany and natural hiftory, in the univerfity of Pennfylvania, who after many exertions, and feveral publications, in the fervice of natural fcience, died of hydrothorax, at Philadelphia, on the 19th of December 1815, in the fiftieth year of his age. His nephew, Dr. William Barton, in an animated and interefting "Biographical Sketch" of his character and purfuits, has preferved fome account of the plants which compofe this genus, written by the late profeffor, three or four days before his death, and accompanied by many particulars, relative to Mr. Purfh and Mr. Nuttall, through whofe means it has come to the knowledge of European botanifts; all which evince a love of fcience, that the moft painful bodily fufferings could not reprefs.—Sims in Curt. Mag. 1487. Purfh 327. Ait. Epit. 364.—Clafs and order, *Icofandria Monogynia*. Nat. Ord. *Loafeæ*, Juff. Ann. du Muf. d'Hift. Nat. v. 5. 18. *Sims*.

Eff. Ch. Calyx fuperior, in five deep fegments. Corolla of many petals, with claws. Stamens uniform. Capfule cylindrical, of one cell, with a lid of three or five valves, and as many parietal receptacles. Seeds numerous, flat, in double rows.

1. B. *ornata*. Large-flowered Bartonia. Purfh n. 1. Ait. n. 1. (B. decapetala; Sims as above, t. 1487.)—Germen leafy. Seeds without a wing.—Found by governor Lewis, in 1804, on chalky foil on the borders of the Miffouri, flowering in July and Auguft. *Purfh*. Profeffor Barton records that Mr. Nuttall firft made this fine plant known to him in 1811, having found it growing all the way from the river Platte to the Andes, on broken hills and in the clefts of rocks. Mr. Purfh by miftake, as the profeffor thought, fpeaks of the foil as volcanic. Living plants were brought to England by Mr. Nuttall, who is unqueftionably entitled to the honour of this difcovery, as he could not know what might be concealed in the herbarium of any deceafed traveller. The figure in the Magazine, though taken from a dried fpecimen, is unexceptionable, as far as it goes. The *herb* is biennial, downy, glaucous, about three feet high. *Leaves* alternate, feffile, oblong, pinnatifid. *Flowers* terminal, enveloped in leaves, three inches broad, with about ten elliptical, acute, white *petals*, and numerous *ftamens*, half as long, whofe *anthers* are elliptical, yellowifh. Thefe *flowers* expand fuddenly in an evening, diffufing a moft agreeable odour, and rival thofe of fome of the fine fpecies of *Cactus* in elegance.

2. B. *nuda*. Small-flowered Bartonia. Purfh n. 2. Ait. n. 2.—Germen naked. Seeds winged.—Found by Mr. Nuttall, on gravelly hills near the Grand Detour of the Miffiffippi, flowering in Auguft. *Root* perennial. *Petals* more numerous. *Barton*. Mr. Purfh obferves that this has fmaller *flowers* than the foregoing, and lefs glaucous *leaves*. The *petals* vary in number, from ten to fifteen.

6†

We have feen no fpecimens, and have fcarcely fufficient materials for drawing up a full generic character.

BARTRAMIA, is intended to commemorate the venerable John Bartram, the friend of Collinfon, Dillenius, Fothergill, and Linnæus, to whom gardeners and botanifts are indebted for fome of the moft valuable plants of North America. The original *Bartramia* of Linnæus, having been referred by its author himfelf to TRIUMFETTA, (fee that article,) Hedwig has transferred the name to a fine, and very diftinct, genus of Moffes, now univerfally received.—Hedw. Crypt. v. 2. 111. Sp. Mufc. 164. Schreb. Gen. 761. Sm. Fl. Brit. 1339. Engl. Bot. v. 14. 997. Compend. 182. Turn. in Sims and Kon. Ann. of Bot. v. 1. 522. Mufc. Hib. 106. Hooker and Taylor Mufc. Brit. 85. t. 3.—Clafs and order, *Cryptogamia Mufci*. Nat. Ord. *Mufci*.

Eff. Ch. Capfule fpherical, furrowed. Outer fringe of fixteen teeth, dilated at the bafe; inner membranous, plaited, deeply laciniated. Veil fmooth. Lid depreffed.

Eight fpecies are defcribed in Engl. Bot. and Compend. Fl. Brit., and there are feveral of exotic growth.

Sect. 1. *Fruit-ftalks fhorter than the ftem.*

1. B. *Halleriana*. Lateral Bartramia. Hedw. Crypt. v. 2. 111. t. 40. Engl. Bot. t. 997. Hook. and Tayl. n. 5. t. 23. (Bryum laterale; Hudf. 483. Ehrh. Crypt. 33. B. n. 1802; Hall. Hift. v. 3. 43. t. 46. f. 8.)—Fruit-ftalks lateral; curved, fhorter than the linear-awlfhaped, fingle-ribbed, rough-edged leaves.—Native of moift rocky mountainous woods, in Switzerland, Germany, Scotland, Wales, and the north of England. The *ftems* are, as Mr. Hooker obferves, perennial, and repeatedly proliferous, fo that, although the *flowers* are, like every *Bartramia*, originally terminal, the *fruit* foon becomes lateral, and remaining two or three years, is found numeroufly ranged along the main ftem, among the denfe, flender *leaves*. When ripe it becomes ftrongly furrowed, though originally fmooth or even.

2. B. *arcuata*. Curve-ftalked Bartramia. Engl. Bot. t. 1237. Fl. Brit. n. 5. Hook. and Tayl. n. 6. t. 23. (Mnium arcuatum; Dickf. Crypt. fafc. 3. 2. t. 7. f. 3. M. chryfocomum; Hedw. Sp. Mufc. 74. Hypnum paluftre erectum, comâ luteâ, bafi nigricante; Dill. Mufc. 302. t. 39. f. 36.)—Fruit-ftalks recurved. Leaves lanceolate, fingle-ribbed, furrowed, finely ferrated. Branches fcattered, fpreading.—Native of mountains in Great Britain and Ireland. According to Mr. Hooker, it is found, in the greateft abundance, on wet rocks, at Lowdore and Kefwick, Cumberland, and is alfo very common in the mountainous diftricts of Ireland, though unknown on the continent of Europe. With all deference to our worthy friend however, the ripe *capfule* is as decidedly furrowed as in any other fpecies. The more branched and tufted habit of this mofs, and the broader, fhorter, rigid, yellowifh, more fpreading *leaves*, at once diftinguifh it from the foregoing. The *fruit-ftalks* foon become lateral, and are wavy rather than recurved, longer than in the preceding. Mouth of the *capfule* fmall, with a red *outer fringe*, whofe teeth are lined, as it were, with the fixteen oppofite teeth of the *inner* one.

Sect. 2. *Fruit-ftalks rifing above the ftem.*

3. B. *pomiformis*. Apple Bartramia. Hedw. Sp. Mufc. 164. Fl. Brit. n. 2. Engl. Bot. t. 998. Hook. and Tayl. n. 1. t. 23. Hook. in Curt. Lond. ed. 2. t. . . . (Bryum pomiforme; Linn. Sp. Pl. 1580. B. capillaceum, capfulis fphæricis; Dill. Mufc. 339. t. 44. f. 1.)—Fruit-ftalks erect, taller than the ftem. Leaves awl-fhaped, fingle-ribbed; fomewhat twifted when dry.—Common on heaths and dry banks, in various parts of Europe, bearing capfules in the fpring. An elegant mofs, confifting of denfely leafy *ftems*

from

from one to three inches in height, clothed and matted together below with copious brown fibres. *Leaves* bright green, slender, gradually tapering from their base; strongly serrated towards the point; somewhat twisted and curved by drying. *Fruit-stalks* near the tops of the stems, about an inch long, bright orange-red, slightly wavy. *Capsule* globose, green and smooth while young; more elliptical when ripe, oblique, brown, with sixteen furrows. *Lid* rather convex, bossed. *Fringe* short, red. *Veil* conical, curved, split half way up on one side.

4. B. *crispa*. Frizzled Bartramia. Swartz Musc. Suec. 73. Turn. in Ann. of Bot. v. 1. 527. Winch Guide v. 2. 16. "Bridel. Musc. v. 2. 3. t. 1. f. 4. Schwægr. Suppl. t. 59." Sm. Compend. n. 3. Engl. Bot. t. 1526. (B. pomiformis β; Turn. in Ann. of Bot. v. 1. 527. Hook. and Tayl. n. 1, β.)—Fruit-stalks erect. Leaves bristle-shaped; dilated at the base; incurved and curled when dry. Lid slightly conical.—Native of mountainous situations in Britain, and other parts of Europe. Larger in its *stems* and *foliage* than the preceding, the *leaves* of a lighter brighter green, longer, and more slender, except at the very base, and when dry so strongly curled, twisted, and involute, as to give the plant a very different aspect. The intelligent authors of the *Muscologia Britannica* nevertheless judge this to be but a variety of the *pomiformis*, and they unite it with Mr. Turner's supposed variety of that species, which he distinguished from *crispa*, and which he has thought to be figured for *crispa*, in Engl. Bot. t. 1526. We acknowledge that figure to be not a very happy one, except the *lid*, which seems to us always rather more conical than in *pomiformis*.

5. B. *ithyphylla*. Straight-leaved Bartramia. Bridel. Musc. v. 4. 132. t. 1. f. 6. Sm. Compend. n. 4. Engl. Bot. t. 1710. Winch Guide v. 2. 17. Hook. and Tayl. n. 2. t. 23.—Fruit-stalks elongated, erect. Leaves capillary, nearly entire, single-ribbed half way up; dilated at the base; straight when dry.—Found on dry banks, in the mountainous parts of Germany, Sweden, England, and Wales. The long, very slender, light-green *leaves* are only serrated at the very point, and are remarkable for remaining always straight when dry, which Mr. Hooker has well attributed to the whole substance of the mid-rib being dilated and lost in the upper half of the leaf, to which it consequently gives firmness. The *capsules* are much curved; their *stalks* longer than in the foregoing. The dilated base of each *leaf* is singularly membranous and shining.

6. B. *gracilis*. Tall Slender Bartramia. Flörke in Schrad. Journ. v. 2. 171. Fl. Brit. n. 3. Engl. Bot. t. 1826. Hook. and Tayl. n. 3. (B. Oederi; Schwægr. Suppl. t. 59, as also, according to Mr. Hooker, B. grandiflora, t. 58. Bryum Oederi; Retz. Prodr. 261. Fl. Dan. t. 478.)—Fruit-stalks from lateral branches, taller than the stems. Leaves lanceolate, serrated towards the point; recurved and twisted when dry.—Native of the loftiest Scottish mountains, as well as of the north of Europe. The *stems* are two or three inches high. *Leaves* broader than in any of the three preceding species, somewhat revolute at the margin, especially when dry, in which state they become recurved, and not curled inwards. Their colour is a darkish grass-green. *Capsules* small, from short lateral shoots.

7. B. *squarrosa*. Spreading-leaved Bartramia. Turn. in Ann. of Bot. v. 1. 528. t. 11. f. 2.—Fruit-stalks lateral, taller than the stems. Leaves awl-shaped, entire; single-ribbed at the base; spreading and straight when dry.—Received from Java by Mr. Dickson. Gathered by Commerson, at the straits of Magellan. The tufted leafy *stems*, shaggy with rusty fibres, and scarcely branched, are two or three inches high. *Leaves* slender, yellowish-green, longer than any of the preceding, except perhaps *B. Halleriana*, and always quite straight, probably from the same cause as in *ithyphylla*, the rib being soon lost in the substance of the leaf. *Fruit-stalks* straight, erect. *Capsule* curved, strongly furrowed. *Lid* convex, blunt.

8. B. *Menziesii*. Tall Forked Bartramia. Turn. ibid. 525. t. 11. f. 1.—Fruit-stalks slightly elevated above the tall forked stems. Leaves lanceolate, single-ribbed, taper-pointed, entire; close-pressed when dry. Capsule nearly globular, with shallow furrows.—Gathered on the north-west coast of America, by Mr. Menzies. The tall slender *stems*, covered with close-pressed, tawny, shining *leaves*, half the length of the last, clearly distinguish this species. The *capsules* are scarcely curved, even when fully ripe, and their surface is wrinkled as well as finely furrowed.

9. B. *sphærocarpa*. Globose Bartramia. Hedw. Crypt. v. 3. 93. t. 38 A. Turn. as above, 525. (Mnium sphæricarpon; Swartz Prodr. 139, from the author.)—Fruit-stalks taller than the slender clustered branches. Leaves lanceolate-awlshaped, close-pressed, finely serrated.—Native of Jamaica. *Swartz*. The slender *stems* are determinately branched, as in the following, to which this species is very nearly allied, though smaller, with longer *branches*. In the *leaves*, though usually narrower, we scarcely find a permanent difference. Hedwig's figure erroneously omits the furrows of the *capsule*.

10. B. *marchica*. Narrow-leaved Bog Bartramia. Web. and Mohr Ind. 5. Sm. Compend. n. 7. Engl. Bot. t. 2074. (B. fontana β; Hook. and Tayl. n. 4. Turn. Musc. Hib. 107. t. 10. f. 1. Mnium marchicum; Hedw. Crypt. v. 2. 108. t. 39.)—Fruit-stalks elongated, much taller than the clustered branches. Leaves lanceolate, finely serrated at the point, close-pressed.—Native of wet situations in Germany, the Highlands of Scotland, and the mountains of Nepaul, for Mr. Hooker assures us his *B. fontana*, Tr. of Linn. Soc. v. 9. 317, is this plant. He is also of opinion that *B. marchica* is merely a lanceolate-leaved variety of the following.

11. B. *fontana*. Broad-leaved Fountain Bartramia. Fl. Brit. n. 4. Turn. Musc. Hib. 107. Hook. and Tayl. n. 4. t. 23. (Mnium fontanum; Linn. Sp. Pl. 1574. Hedw. Sp. Musc. 195. Bryum fontanum; Engl. Bot. t. 390. B. palustre, scapis teretibus stellatis, capsulis magnis subrotundis; Dill. Musc. 340. t. 44. f. 2.)—Fruit-stalks elongated, much taller than the clustered branches. Leaves ovate, finely serrated at the point, close-pressed.—Native of spongy bogs throughout Europe, and perhaps in other parts of the world. It is one of our handsomest and largest mosses, bearing capsules in spring and summer. The barren *flowers* form terminal leafy stars, on a separate plant from the *capsules*, whose stalks are two or three inches long, rising high above the tuft of leafy branches, which have overtopped the originally terminal situation of their *flowers*. *Capsule* brown, with a minute sharp beak to the lid. *Leaves* usually direct, broadly ovate, entire at the edges, the point only being serrated. They appear at first sight very different from the lanceolate narrow shape of the last, and still more from the curved taper-points of Mr. Hooker's *B. falcata*, Tr. of Linn. Soc. v. 9. 317. t. 27. f. 4, which he is disposed to reduce to the *fontana*, having found the latter in Switzerland with leaves as decidedly curved. We cannot dispute his accuracy of observation and judgment in this point; nor are we much disposed to question his further opinion, that Hedwig's *sphærocarpa*, our n. 9, as well as

 scabrida

scabrida Muhlenbergii, (of which we have specimens from its finder,) and *radicalis* of Schwægrichen's Supplement, may possibly be likewise varieties of *B. fontana*.

BARYTES, in *Chemistry*, one of the earthy substances termed *alkaline*. We stated that this earth was considered by Bergman, Lavoisier, and other eminent chemists, as a refractory metallic oxyd; and this supposition has been since confirmed by the experiments of Berzelius and Pontin, who, led by sir H. Davy's decomposition of potash and soda by galvanism, subjected this earth to the same agent. Their experiments were attended with complete success, and have been since verified by sir H. Davy and other chemists. To this metallic basis, Davy gave the name of *barium*. More lately, Dr. Clarke of Cambridge thought he had decomposed this earth by exposing it to an intense heat, produced by the combustion of a stream of oxygen and hydrogen gas, mixed together in the requisite proportions to form water. To the metal thus obtained, he proposed to give the name of *plutonium*. Many chemists, however, think, that Dr. Clarke from some cause or other permitted himself to be deceived in these experiments, and that instead of a metal he only obtained a slag with a pseudo-metallic surface.

Barium obtained by galvanic agency is a solid metal of the colour of silver. It melts at a temperature below redness, and is not volatilized by a heat capable of melting plate-glass; but at that temperature it acts violently on the glass, probably by decomposing the alkali of the glass, and converting it into a protoxyd. When exposed to the air, it rapidly tarnishes, absorbs oxygen, and is converted into barytes. It sinks readily in water, and seems to be at least four or five times heavier than that fluid. It decomposes water very rapidly. Hydrogen is emitted, and the barium is converted into barytes. Barium seems to be both ductile and malleable.

Barium, according to the experiments of Gay Lussac and Thenard, combines with two proportions of oxygen. The protoxyd is the earth called *barytes*. No direct experiments have been made to ascertain the proportion of oxygen it contains; but this may be determined by other means. Thus, sulphate of barytes is composed of

Sulphuric acid - - -	100
Barytes - - - -	194

and carbonate of barytes of

Carbonic acid - - -	100
Barytes - - - -	354.54

Hence it may be easily ascertained by calculation, that the equivalent number for barytes is 97.5, oxygen being 10; and if we consider this earth as a protoxyd, the number for barium will of course be $97.5 - 10 = 87.5$. Hence one hundred parts of barytes consist of

Barium - - - -	89.74
Oxygen - - - -	10.26
	100.00

Gay Lussac and Thenard found, that when dry barium, from nitrate of barytes, or from the carbonate of barytes decomposed by charcoal, was heated in oxygen gas, it absorbed that gas with great rapidity. The peroxyd formed was grey. It gave out its excess of oxygen, when put into water. When heated in hydrogen gas, the hydrogen was absorbed, and water was formed, which remained united to the barytes.

The salts of barytes are described under SALTS. The equivalent numbers of these, however, require a little correction; for which purpose, we refer our readers to the article ATOMIC *Theory*, where the latest determinations will be found.

The muriate of *barytes* (see SALTS) has been employed as a medicine in scrofulous and cancerous cases. Although it has been accounted highly poisonous, Dr. Johnstone, in his "Essay on Poisons," says, that he has seen a female take 30 drops of a saturated solution of muriate of barytes *repeatedly* in the course of a day, without even nausea: and he concludes, that it would require at least two or three drachms to do mischief. Barytes is capable of making a very tenacious cement, but it has been yet much used in the arts, except by limners, as a most excellent water-colour. Mr. Hume, says Mr. Parkes (Chem. Catech.), many years ago discovered the method of making a colour from this earth. It is the only *white* for water-painting that never changes. It has another peculiar advantage, that it may be mixed with any other colour without injury. It is sold under the name of "Hume's permanent White." See WHITE.

BARYTES, *Carbonate of*. See CARBONATE *of Barytes*.

BASALT, in *Mineralogy* and *Geology*, a compact dark-coloured rock, classed by geologists with trap-rocks. (See TRAP.) It has received the name of whin-stone in the north of England (see WHIN-STONE); and in Staffordshire, Rowley-rag (see ROWLEY-RAG). In the arrangement of rocks by the Wernerian geologists, basalt is considered as a compact green-stone, which latter rock is composed of felspar and hornblende; but green-stone being more crystalline, the constituent parts are distinctly separated. Green-stone and basalt often pass into each other. (See GREEN-*Stone*, *Addenda*.) Basalt has generally been classed with simple minerals; and a short account of its characters and constituent parts are given under the article BASALT (which see). More correct analyses of this rock have since been made, in which soda is found to be a constituent part. We greatly doubt the propriety of classing basalt with simple minerals; for it has been ascertained, that most basaltic rocks are composed of two or more minerals intimately mixed, but requiring the aid of a lens to distinguish them. Of these, the mineral called augit is the one which prevails, or forms the dark colour: it is intermixed with felspar and olivine. It is thus ascertained that basalt resembles in its constituent parts, as it does in other characters, dark compact lava. (See VOLCANIC *Products*.) Before the observations of the French mineralogist Cordier, both basalt and compact dark lava were supposed to be formed of hornblende and felspar.

Before the blow-pipe, basalt melts easily, without addition, into an opaque black-coloured glass. It melts at a comparative low degree of temperature from 38° to 45° of Wedgewood. If it be cooled rapidly, the mass is vitrified; if cooled slowly, it is stony, and presents a tendency to a columnar arrangement. Some interesting experiments of this kind are described under the article ROWLEY-RAG (which see).

The constituent parts of basalt, as given by Klaproth and Dr. Kennedy, are as follow:

Basalt

	Basalt of the Haffenberg.	Basalt of Staffa.
Silex	44.50	48.0
Alumine	16.75	16.0
Lime	9.50	9.0
Magnesia	2.25	
Soda	2.60	4.0
Oxyd of iron	20.0	16.0
Oxyd of manganese	0.12	
Muriatic acid		1.0
Water and volatile matter	2	4
	Klaproth 97.72	Kennedy 98

Basalt exists abundantly in the northern parts of England and in Scotland. It occurs at the Clee Hills in Shropshire, and at Rowley in Staffordshire; but is not met with in the southern counties of England. Some rocks of the trap or basaltic formation occur in Gloucestershire and Somersetshire. Basalt forms the well-known columnar ranges at the Giant's Causeway in the county of Antrim, and at Staffa. See GIANT'S *Causeway* and STAFFA.

The origin of basaltic rocks has excited much attention among geologists. Their similarity to volcanic rocks in composition and structure, the remarkable positions in which they occur, and the changes they frequently produce on the rocks in their vicinity, have led most intelligent and unprejudiced observers to the conclusion, that a great number, if not all, basaltic rocks have been formed by igneous fusion. The mineral veins filled with basalt, that intersect other rocks, frequently produce all the changes which a fluid mass of heated lava would have effected. (See VEINS, *Mineral*, and TRAP.) In the latter article, the arguments which have been offered against the igneous origin of basalt are also stated. For further remarks on the subject, see *Systems of* GEOLOGY. But the most striking phenomena, and which seem to decide the question, are presented in the districts called Velay and Viverais, in the south of France. These districts have all the appearance of having been once the seats of active volcanoes, the remains of which are distinctly visible: from some of these ancient volcanoes, the lava may be traced to the crater, and this lava is a compact columnar basalt. See *Plate* II. *Mineralogy*, *Basalt*.

The mountain of Aisa, called La Coupe, or the Col d'Aisa, of which a view is given, is situated near the village Entrague, in the Viverais. This village, according to St. Fond, is placed on a kind of platform of volcanic matter above the torrent of the Volant, which has here excavated a bed of great depth and width, bordered on the right and left by grand ranges of basaltic columns. In the midst of a prodigious rampart of these columns, at different levels, may be seen a current of lava descending from a neighbouring mountain, and joining the columns that border the river. Here we see, in the most unequivocal and convincing manner, that the lava under the form of hard and compact basalt, has flowed at several times from the mountain, and has formed the great causeway at different heights, to which the lava is still united and adhering. We may follow the current of basalt up the declivity of the mountain, which has a conical form and a great elevation, and is entirely volcanic from the base to the summit. According to St. Fond, it is the most remarkable and best characterised crater in all the Viverais.

All the base of the conical mountain La Coupe is covered by porous and cellular lava in detached irregular masses, heaped on each other, so as to leave no doubt that they have been ejected in a liquid state by one or more formidable eruptions, and have taken their forms as they fell at the foot of the cone.

On reaching the summit or edge of the crater we may see the whole mountain, which forms a regular cone resembling that of Vesuvius. The edges of the crater are steep, and formed in the shape of a tunnel; the greatest diameter being from 140 to 150 toises, and the depth about 600 feet. The lavas are coloured, and converted into a kind of puzzolani, and mixed with great masses of black and sharp scoriæ, which makes the descent difficult. At the bottom of this inverted cone is a magnificent plantation of chesnut-trees, which have flourished astonishingly in this ancient mouth of a volcano, having no other soil than the dry and friable puzzolani. It may be noticed, that the crater of Vesuvius was lined with lofty trees at the period of its eruption in 1631, having been in a state of repose for nearly four hundred years.

At the bottom of the crater in La Coupe, we may observe a breach or opening on the side facing the houses of the Colet d'Aisa; there is a general inclination to this opening, which has served to give a passage to the lava. When we are arrived at the opening, we may observe a stream of lava coming from the interior, and taking its course down the mountain, it descends in a waving direction amidst the porous lavas. This current is a true black basalt, compact and similar to that of the columns; in certain parts, its surface appears blistered, and in other places is become porous. Following the current of lava, after it has crossed the path, which is at the foot of the mountain, we may trace its course to the bed of a torrent not far from the high road. There may be seen, says St. Fond, a spectacle most gratifying to the geologist; for the lava, whilst still on the descent, and before it had reached the level ground, has affected a prismatic form; and the lava at the bottom has formed a beautiful colonnade.

We cannot doubt, says St. Fond, after viewing this mountain, that the lava which flows from volcanic craters is not absolutely the same as basalt. The name of La Coupe is evidently derived from the crater, the Latin name for a cup.

There is another conical mountain in the Viverais with a distinct crater, called La Coupe de Jaujeac. The general resemblance of the latter is so similar to that of La Colet d'Aisa, that it may well be conceived from the view given of the latter. (See *Plate* II. *Mineralogy*.) It is rather less lofty, but the crater is nearly twice as large. The river Vignon flows at the foot of Jaujeac. On its banks are immense ranges of basaltic columns, the most elevated of any in the Viverais. They inclose the borders of the river on each side for more than a league.

Some of the prisms rise in one shaft to the height of fifty feet; in other parts, the articulated columns form a kind of regular causeway. In some places the columns are bent, and above we see immense ramparts of basalt, of more than 140 feet in height, in several ranges, spreading out like a fan, and diverging in every direction. On the left, the current of basalt covers several little hills of granite, and is moulded upon them. In some parts, the compact lava forms one solid mass; in other places, it is arranged in great beds. Nothing can be more grand and varied, says St. Fond, than the course of the river Vignon to Ardeche, where the great current of lava joins the streams that have flowed from the volcanoes of Theuyts and Neyrac. Faujas St. Fond sur les Volcans eteints du Viverais et du Velay.

Plate II. *Mineralogy*, *Basalt*, which is taken for this work, will convey at once a satisfactory proof of the igneous origin of the basaltic columns in the Viverais; but one engraver has

has omitted to reprefent the divifion of the upper part of the bed into columns. The ends of the columns may be diftinctly feen before the bafalt reaches the river.

BASALTIC HORNBLENDE. See MINERALOGY, *Addenda.*

BASMAN, in *Geography*, an ifland of the Perfian gulf, fituated $11\frac{3}{4}$ leagues N.N.W. from Shorga, in N. lat. 25° 54′. It is an uninhabited ifland, about five miles long, and remarkable for a high round hill in its centre.

BASSORA, col. 1, l. 15 from the bottom, after 1668, add —fubject to various revolutions. L. 11, after Porte, infert—The muffeleem, or governor, has ever fince the year 1787, when it was recovered from the Monte-fidge Arabs, by Solyman Pacha, been fent from Bagdad, and is generally an officer of high rank. Full liberty is allowed, &c. Col. 2, l. 12, after 50,000, add—or 60,000, confifting of perfons of almoft every nation in the Eaft. L. 29, N. lat. 31° 30′. E. long. 48° 39′.

BAT-*Horfes*, in *Artillery*, are baggage-horfes belonging to the officers when on actual duty; and *bat-men* were originally fervants hired in time of war to take care of the horfes belonging to the train of artillery, baggage, &c., and who, during their fervice, generally wear the king's livery. Thofe who are excufed regimental duty, for the fpecific purpofe of attending to the horfes belonging to their officers, are called bat-men. Horfes and men of the preceding defcription are fometimes called *bow-horfes* and *bow-men.*

BATARREA, in *Botany*, fo named by Purfh, in honour of his learned predeceffor in the ftudy of the *Fungus* tribe, Antonio Battarra, profeffor of philofophy in the Lyceum at Rimini, author of *Hiftoria Fungorum Agri Ariminenfis*; publifhed at the neighbouring city of Faenza, in 1759, in 4to., with 40 plates. A preceding edition is indicated in the title-page, which Haller dates 1755. The author was a difciple of Janus Plancus, or Giovanni Bianchi, the conchologift, and died in 1789, according to Dryander in Bibl. Bankf. He was, however, an original obferver, and delineated the figures himfelf.—Perf. Syn. Fung. 129.—Clafs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eff. Ch. Stalk burfting from a wrapper, and elevating the bell-fhaped, downy, powdery head, capped with a portion thereof.

1. B. *phalloides.* Tall Brown Batarrea. Perf. n. 1. t. 3. f. 1. (Lycoperdon phalloides; Dickf. Crypt. fafc. 1. 24. Woodward in Phil. Tranf. v. 74. 423. t. 16. Sm. Spicil. 11. t. 12. Sowerb. Fung. t. 390.)—Found on fandy banks about Norwich, by Mr. William Humphrey, and about Bungay in Suffolk, by T. J. Woodward, efq. We have reafon to think it may be met with in other parts of England, as Mr. Hudfon, author of the *Fl. Angl.*, told the writer of the prefent article, he had feen this fingular production on heaths in Kent, but paffed it by as a blafted or abortive *Agaricus procerus.* We have not heard of this very curious fungus in any other part of the world. The *volva*, or wrapper, is about the fhape and fize of a hen's egg, originally of three flightly coriaceous layers, hollow internally, where a fpongy *ftalk* is formed, which rifes very fuddenly (in a few hours) to its full height of about twelve inches. This *ftalk* is hollow, foon becoming dry, and externally filamentous, and carries up, on its fummit, full half the innermoft layer of the *volva*, which is white and fmooth within, covered externally with copious brown powdery feeds, intermixed with fibres, as in a *Lycoperdon.* A fmaller portion of the two outer layers, irregularly torn away, forms a double cap to this powdery furface.

BATAVIA, in *Geography*, a poft-townfhip of New York, the capital of Genefee county, 256 miles from Albany, on the great road to Buffalo; about 50 miles long from N. to S., and from 24 to 28 miles wide; bounded N. by lake Ontario, E. by Murray and Caledonia, S. by Warfaw, Attica, and Sheldon, and W. by Niagara county. The whole population of this town, in 1810, was 3645, with 104 fenatorial electors, and 464,216 dollars of taxable property.

BATH. Add—The city of Bath, by the return of 1811, contained 3933 inhabited houfes, and 31,496 perfons; *viz.* 12,373 males, and 19,123 females.

BATH, a county of Virginia, &c. add—The total number of inhabitants, in 1810, was 4837, including 882 flaves.

BATH, a townfhip, &c. l. 2, for 949 *r.* 2491.

BATH, in Grafton county, &c. l. 2, for 493 *r.* 1316.

BATH, a poft-townfhip, the capital of Steuben county, 245 miles W. of Albany. The whole population, in 1810, was 1036, with 97 electors.

BATH, a townfhip of the diftrict of Ohio, in the county of Greene, having 913 inhabitants.

BATSCHIA, in *Botany*, was fo named by profeffor Gmelin, the compiler of the 13th edition of the whole *Syftema Naturæ* of Linnæus, in honour of profeffor Batfch of Jena, known particularly by his *Elenchus Fungorum*, publifhed at Halle in 1783 and 1784, in 4to., with coloured plates, and his *Analyfes Florum*, a work of a fimilar defcription, which appeared in 1790. Gmelin however adopted this genus, like many others, entirely from the *Flora Caroliniana* of Mr. Thomas Walter, who had modeftly left fuch genera without names, becaufe, though he fuppofed them to be new, he had not the advantage of books, or other helps, to confirm his opinion. In the prefent inftance we apprehend his *Anonymos*, n. 78. Fl. Carol. 91, cannot be fupported, but we fhall give its character and fynonyms. —Gmel. Linn. Syft. Nat. v. 2. 315. Michaux Boreal.-Amer. v. 1. 129. Purfh 132.—Clafs and order, *Pentandria Monogynia.* Nat. Ord. *Afperifoliæ*, Linn. *Borragineæ*, Juff.

Gen. Ch. *Cal.* Perianth in five deep, linear, acute, erect fegments. *Cor.* of one petal, falver-fhaped; tube ftraight, longer than the calyx, furrounded at the bafe, internally, with a ring of hairs; throat pervious; limb orbicular, in five deep rounded fegments. *Stam.* Filaments five, very fhort, inferted into the tube; anthers erect, ovate, concealed within the tube. *Pift.* Germen fuperior, roundifh, with four prominences; ftyle capillary, the length of the ftamens; ftigma minute, flightly cloven. *Peric.* none. *Seeds* four, ovate, hard, polifhed.

Eff. Ch. Corolla falver-fhaped; throat naked; tube with a hairy internal ring at the bafe; fegments of the limb rounded. Calyx in five deep fegments.

Obf. It appears to us that this genus cannot be kept feparate from LITHOSPERMUM. (See that article.) The only mark of diftinction is the hairy ring in the bottom of the tube, which furely is not fufficient. The form of the *corolla* is as much funnel-fhaped as in that genus, and the *feeds* are acknowledged to be precifely the fame. Michaux afks, (perhaps on account of the yellow *flowers*,) "whether *L. orientale* of Linnæus be not a *Batfchia?*" We find no traces there of the hairy ring, nor was any fuch character detected by Mr. Bauer, when he made the drawing for Dr. Sibthorp's Fl. Græca, t. 160. This circumftance does away the prefumption of a generic difference here indicated by colour. The following are the only reputed fpecies of *Batfchia.*

1. B. *Gmelini.* Hairy Puccoon. Michaux n. 1. Purfh n. 1. (Anonymos carolinenfis; Walt. Carol. 91.)—Hairy. Floral

Floral leaves ovate. Calyx elongated, fomewhat lanceolate. —In dry funny woods of Lower Carolina. Perennial, flowering from May to July. Seen in Mr. Lyon's herbarium. *Purfh.* *Flowers* bright yellow, on fhort footftalks. *Walter.*

2. B. *canefcens.* True Puccoon. Mich. n. 2. t. 14. Purfh n. 2. (Anchufa hirta; Muhlenb. Cat. 19. A. virginiana; Linn. Sp. Pl. 191. A. floribus fparfis, caule glabro; Gron. Virg. ed. 2. 24. Lithofpermum virginianum, flore luteo duplici; Morif. fect. 11. t. 28. f. 4.)—Downy and hoary. Leaves all oblong. Calyx very fhort. Segments of the corolla entire.—On dry funny hills on a fandy foil, in Virginia, Tenneffee, &c. perennial, flowering in June and July. *Flowers* of a deep golden-yellow. The *root* is covered with a red fubftance, which is the true Puccoon of the Indians, and paints a beautiful red. *Purfh.* With this colour, it feems, the native Americans painted their bodies. The whole *herb* is clothed with foft hairs, nor is the *ftem*, as Linnæus fays, fmooth. He had no fpecimen of this plant, when he wrote either edition of *Sp. Pl.*, but afterwards confounded herewith a totally different Siberian plant, which lies under this name in his herbarium, but without the requifite marks of authenticity. Morifon's figure reprefents a double-flowered variety, which is very unufual in this natural order.

3. B. *longiflora.* Long-flowered Puccoon. Purfh n. 3. —"Downy and filky. Leaves linear. Calyx long and linear. Segments of the corolla notched; tube elongated." —Found by Mr. Nuttall, on the banks of the Miffouri. Perennial, flowering in July. *Flowers* yellow. *Purfh.*

We fhould prefume that all thefe fpecies belong rather to *Lithofpermum* than to *Anchufa*, but we have only feen the fecond, communicated in a dried ftate, from Pennfylvania, by the late Rev. Dr. Muhlenberg.

BATTAM, the *Bakta* of Strabo, in *Geography*, a town of Armenia, in the pachalic of Erzeroom, on the Euxine. This is a commercial place; and between it and Akifka are the towns of Ifchoetfcheloe, Gartziemie, Schwaghaewal, and Kaettaejac.

Vol. IV.

BATTING. See Cotton, and Manufacture *of Cotton.*

BATTLE, l. *ult. r.* and in 1811 had 361 houfes, and 2531 perfons; 1232 being males, and 1299 females.

Battle, *Order of.* Col. 6, l. 19, to l. 41, *dele.*

BATZ. Add—The florin at Augfburg is divided into 15 batzes, (or batzen,) or 20 kayfergrochen. A thaler, or rix-dollar, is worth $1\frac{1}{2}$ florin, $22\frac{1}{2}$ batzes, or 90 creutzers. At Bafil, the thaler, or rix-dollar, is worth 3 livres, 27 good batzes, or 30 Swifs batzes; the florin, 15 good batzes, or $16\frac{2}{3}$ Swifs batzes; the livre, 9 good batzes, or 10 Swifs ditto. A good batze is 4 creutzers; a Swifs batze, 2 fous, or $3\frac{3}{5}$ creutzers. At Bern, accounts are kept in livres of 20 fous, the fou of 12 deniers; alfo in livres, or francs, of 10 batzes, or 40 creutzers; and in crowns of 25 batzes, or 100 creutzers. A rix-dollar, or ecu blanc, is worth 30 batzes; a crown, 25 batzes; a florin, 15 batzes; a livre, or franc, 10 batzes; a pfund, $7\frac{1}{2}$ batzes, or 15 fous; a batze, 2 fous, or 4 creutzers.

BAUERA, in *Botany*, received its name, not from fir Jofeph Banks, as Mr. Andrews, by miftake, has recorded, but from the author of the prefent article; in due commemoration of thofe excellent botanical artifts, and practical obfervers, Mr. Francis Bauer, fo long employed as a draughtfman at Kew, and his brother Mr. Ferdinand Bauer, who after being engaged in the fame occupation by Dr. Sibthorp in Greece, accompanied Mr. Brown to New Holland, and is now returned to Germany, having left behind him in England unrivalled monuments of his abilities.—Andr. Repof. t. 198. Ait. Hort. Kew. v. 3. 317. Salifb. in Ann. of Bot. v. 1. 514. t. 10.—Clafs and order, *Polyandria Digynia.* Nat. Ord. *Saxifragæ Juff.* Salifb. *Cunoniaceæ*, Brown, Bot. of Terra Auftr. 16.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in eight deep, lanceolate, reflexed, permanent fegments. *Cor.* Petals eight, obovate, equal, concave, alternate with the calyx, and nearly twice as long. *Stam.* Filaments numerous, thread-fhaped, inferted into the receptacle, half as long as the petals; anthers erect, obovate, of two cells, burfting at the fummit. *Pift.* Germen fuperior, fomewhat pyramidal, obtufe; ftyles two, thread-fhaped, longer than the ftamens, recurved; ftigmas fimple, obtufe. *Peric.* Capfule roundifh, tumid, fomewhat compreffed, with two fhort, divaricated, pointed lobes, of two cells and two valves, burfting at the top, between the points; partition contrary to the valves. *Seeds* numerous, oval, corrugated, inferted into the central column.

Eff. Ch. Calyx inferior, in eight permanent fegments. Petals eight. Capfule inflated, of two cells, with many feeds.

1. B. *rubiæfolia.* Madder-leaved Bauera. Salifb. as above. Ait. n. 1. (B. rubioides; Andr. Repof. t. 198. Curt. Mag. t. 715. Venten. Malmaif. t. 96.)—Native of New South Wales. Firft difcovered in that country by fir Jofeph Banks. We received fpecimens and feeds from Dr. White, among the firft communications from the fettlement there, and this beautiful fhrub was raifed by the late marchionefs of Rockingham, at Hillingdon, in 1793. It requires the fhelter of a green-houfe, or confervatory, and flowers during moft part of the fummer and autumn. The *ftem* is five or fix feet high, much branched, woody, but flender and weak; the branches oppofite, round, leafy, fomewhat hairy. *Leaves* oppofite, or fometimes three together, ternate, nearly feffile, evergreen, widely fpreading; *leaflets* three-quarters of an inch long, lanceolate, diftantly ferrated, their ribs a little hairy beneath; their upper furface convex, of a deep fhining green; under paler. *Flowers* axillary, on fimple hairy ftalks, longer than the *leaves*, a little drooping, fcarcely an inch broad, of a beautiful rich rofe-colour, with yellow anthers, inodorous. The parts of the flower vary occafionally in number, from feven to nine or ten. The *branches*, like the *leaves*, are fometimes three together, and when young, have, like them, a reddifh tinge, which the permanent *calyx*, and old *leaves*, likewife affume. We do not very clearly perceive the refemblance to Madder in the *leaves*, and fhould have been glad if the fpecific name originally propofed, *formofa*, had been retained for a plant which fo well deferves that appellation.

Another fpecies is mentioned, by the name of *B. humilis*, in Ait. Epit. 364, as introduced at Kew, from New Holland in 1805, and flowering in June and July. But not a word is faid refpecting the fpecific differences between the two.

BAYAZID, in *Geography*, one of the Turkifh pachalics of Armenia: the city of this name lies at the diftance of two days' journey from Erwan, nine from Erzeroom, and four from Khoi, and occupies the declivity of a mountain, the fummit of which is ftrongly fortified. The city is furrounded with walls and ramparts: it has two churches and three mofques; and the monaftery of Karu Killeefea is famous for the beauty of its architecture, its antiquity, and its grandeur. The inhabitants are reported to amount to about

about 30,000, and are efteemed the moft learned and warlike people in Armenia. The climate is mild, and the city, with the extenfive territory attached to it, is under the government of a pacha of two tails, archbifhop of Merdin. M'Kinneir's Perfia.

BAYLA, the capital of Lus, a diftrict of the Perfian empire, in the province of Mekran, and country of the ancient Oritæ, is built on the N.E. bank of the river Pooralee, and contains 1500 houfes, and 6000 inhabitants, of whom 400 are Hindoos. The prefent chief can bring into the field 4000 irregular troops, and enjoys a revenue of 50,000 rupees *per annum*.

BAYOU, a term originally Spanifh, fignifies the diminutive of bay; but in Louifiana, where it frequently occurs, it is fynonymous with the word *creek*, and confequently becomes the diminutive of river.

BEAN-Goose. See ANAS and DUCK.

BEATTIE, JAMES, &c. l. 2, born Nov. 5; l. 12, latter, by the liberality of a mother, (his father having died when he was feven years of age,) by, &c.; l. 18, *dele* at Alloa; and l. 19, *dele* affiftant to the; l. 24, for 1760 *r.* 1761; l. 41, infert—which was written about the year 1764, though not publifhed till fome time after. Col. 2, l. 35, *dele* following; l. 62, for not long afterwards *r.* in 1770; l. 65, for 1777 *r.* 1776, (in confequence of which he obtained the penfion above-mentioned.) Col. 3, l. 23, infert—In 1790 he publifhed a fummary of his lectures under the title of "Elements of Moral Science;" the firft volume of which contains a very accurate enumeration and arrangement of the perceptive faculties and active powers of man. He has alfo given a curfory view of what is called natural theology. The fecond volume, publifhed in 1793, comprehends much mifcellaneous information on ethics, economics, politics, and logic, including rhetoric. Towards the latter part of his life, his time, &c.

BEAUCAIRE, l. 7, *dele* The part of the Rhine is well conftructed.

BEAVER, in *Geography*, a county of Pennfylvania, containing 12,168 inhabitants, in which are feveral townfhips of the fame name; fuch as *North Beaver* with 932, *Big Beaver* with 702, *Little Beaver* with 1379, *Beaver Borough* with 426, and *South Beaver* with 1351 inhabitants.—Alfo, a townfhip of Pennfylvania, in Northumberland county, having 502 inhabitants.—Alfo, a townfhip of Crawford county, with 236 inhabitants.—Alfo, a townfhip of Columbiana county, in the diftrict of Ohio, having 433 inhabitants.—Alfo, a townfhip of the fame diftrict, in Greene county, having 793 inhabitants.

BEAVER *Creek*, a townfhip of Pennfylvania, in Beaver county, with 774 inhabitants.

BEAVER *Kill*, a townfhip of the diftrict of Maine, in the county of Kennebeck, containing 354 inhabitants.

BEAUFORT, in South Carolina, l. 4, *r.* 25,887, including 20,914 flaves.

BEAUFORT, (col. 2, after l. 14,) a county of North Carolina, containing 7204 inhabitants, of whom 2,568, are flaves.

BEAUFORTIA, in *Botany*, a truly noble genus, confecrated, by Mr. Brown, to the memory of Mary duchefs of Beaufort, who died January 7th, 1714, in the 85th year of her age. Her grace cultivated a number of rare plants in the ftoves and green-houfes at Badminton, Gloucefterfhire, during the life-time of her hufband, Henry, firft duke of Beaufort, whofe death happened in 1699. The plants introduced by her always therefore bear this date in Mr. Aiton's *Hortus Kewenfis*. Numerous fpecimens from the Badminton garden were communicated to fir Hans Sloane, and if we are not miftaken, a fplendid herbarium in the Britifh Mufeum, bound in feveral large folio volumes, bears the title of "The Duchefs of Beaufort's Plants."—Brown in Ait. Hort. Kew. v. 4. 418.—Clafs and order, *Polyadelphia Icofandria*. Nat. Ord. *Hefperideæ*, Linn. *Myrti*, Juff.

Gen. Ch. *Cal.* Perianth half fuperior, of one leaf, turbinate; limb in five deep, awl-fhaped, deciduous fegments. *Cor.* Petals five, elliptical, feffile, inferted into the rim of the calyx, between its fegments, and of equal length. *Stam.* Filaments very numerous, in five fets, inferted into the calyx, oppofite to the petals, the claw of each fet linear, hairy at the bafe internally, much longer than the petals, divided at the top into feven, eight, or more, capillary fpreading fegments about a quarter the length of the claw; anthers terminal, inferted by the bafe, of two divaricated, conical, deciduous, fingle-celled lobes. *Pift.* Germen in the bottom of the calyx, fmall, roundifh, hairy at the fummit; ftyle thread-fhaped, fhorter than the ftamens, varioufly bent upwards and downwards; ftigma acute. *Peric.* Capfule coated with the bafe of the calyx, and firmly united to the branch, roundifh, of three cells. *Seeds* folitary.

Eff. Ch. Calyx in five fegments. Petals five. Stamens numerous, very long, in five fets, oppofite to the petals; anthers of two deciduous lobes. Capfule clothed with the bafe of the calyx, three-celled, permanent. Seeds folitary.

Obf. Many of the flowers are faid to want the *ftyle*. We are not clear, from the account of the author of this genus, whether more than one *feed* is perfected in each *fruit*. The *capfules* remain in maffes furrounding the branches, long after the *feeds* are gone, perhaps for feveral years, being firmly united to the bark or wood; a character common to many of this natural order in New Holland, as MELALEUCA, (fee that article,) and others. The very peculiar *anthers* feem to afford the moft effential character of *Beaufortia*, and diftinguifh it from its near ally CALOTHAMNUS. See that article hereafter.

1. B. *decuffata*. Splendid Beaufortia. Br. in Ait. n. 1. Sims in Curt. Mag. t. 1733.—Leaves oppofite, ovate, manyribbed, croffing each other in pairs. Claws of the ftamens very long, their filaments radiating.—Gathered by Mr. Brown, on the fouth-weft coaft of New Holland, and fent to Kew by Mr. Good, in 1803. A green-houfe fhrub, flowering in the fpring, and increafed by cuttings. The *branches* are angular. *Leaves* feffile, crowded, half or three-quarters of an inch long, recurved, fmooth, rigid, entire, full of pellucid dots; paler beneath. *Flowers* in denfe tufts, furrounding the branches here and there, moft confpicuous for their copious fpreading tufts of *ftamens*, an inch and a quarter or more in length, all over of a rich fcarlet, the *petals*, as well as calyx, being green.

2. B. *fparfa*. Alternate-leaved Beaufortia. Br. in Ait. n. 2.—Leaves fcattered, elliptical, many-ribbed.—Gathered in the fame country, by Mr. Brown, from whence it was likewife fent to Kew, by Mr. Good, in 1803, but does not appear to have flowered in 1812, when the fourth volume of Hort. Kew. was printed.

We prefume Mr. Brown's *Prodromus*, when completed, will make us acquainted with more fpecies of this genus.

BEAUMARIS, col. 2, l. 9, for 1275 *r.* 1295. Col. 3, l. 1, for 37 *r.* 57; l. 37, *r.* Lavan. Add—The borough of Beaumaris contained in 1811, 295 houfes, and 1810 perfons; 809 being males, and 1001 females.

BECKET, in *Geography*, l. 2, for 751 *r.* 1028.

BEDDOES, THOMAS, M.D. in *Biography*, a diftinguifhed phyfician and philofopher, was the fon of an opulent tanner at Shiffnall in Shropfhire, and born in 1760. Indicating at an early age peculiar talents, and difpofed to cultivate them by diligent

diligent application, he was deftined for a learned profeffion. With this view, after the requifite previous education, he was entered, in the year 1776, at Pembroke college, Oxford, and in the progrefs of his ftudies acquired the reputation of a claffical fcholar; connecting with his other purfuits the ftudy of the French, Italian, and German languages, as well as of pneumatics, chemiftry, mineralogy, and botany. After having taken his firft degree of arts, he repaired to London, where he profecuted the ftudy of anatomy and phyfiology, and publifhed tranflations of Spallanzani's Differtations, of Bergman's Effay on Elective Attractions, and of Scheele's Chemical Effays. At Edinburgh, where at this time he had commenced his ftudies, he obtained high reputation among his fellow-ftudents. In 1786 he graduated M.D. at Oxford, and in the following year vifited the continent. Upon his return, he was appointed to occupy the chemical chair at Oxford. At this period he formed an acquaintance with Dr. Darwin, which gradually ripened into the intimacy and confidence of friendfhip. In 1790 he prefented to the public an analytical account of the writings of Mayow, well known for his early difcoveries in the department of pneumatic chemiftry. (See his article in the Cyclopædia.) And he alfo communicated feveral papers to the Royal Society. As a chemical profeffor at Oxford, he was a popular lecturer; and he was much refpected in the univerfity on account of the rank he occupied in general literature and fcience: but interefting himfelf in the party politics of that period, and avowing his oppofition to fyftems which then prevailed with regard both to church and ftate, he found it expedient to refign his profefforfhip in 1792. He was adverfe, however, to that deteftable fpirit which blended itfelf in France with their ftruggles for liberty. Among other publications which iffued from the prefs about this time, our limits will only allow the mention of his "Obfervations on the Nature of Demonftrative Evidence, with Reflections on Language," intended to facilitate the ftudy of geometry to youthful minds, by fhewing, in oppofition to the doctrine of the author of Hermes, that geometry is founded in experiment, and that its elements may be rendered palpable to the fenfes. The moft popular of his publications was a fmall work, which appeared under the title of the "Hiftory of Ifaac Jenkins," a fictitious narrative, exhibiting the character of a labourer immerfed in the evils of habitual drunkennefs, but reformed to fobriety and induftry; of which his biographer (*ubi infra*) fays, that if the author had left no other monument of his ingenuity and benevolence, he would not have lived in vain. Without adverting to his other writings, we fhall proceed to mention his pneumatic eftablifhment in the vicinity of the Briftol hot-wells, undertaken and for fome time liberally fupported for the purpofe of curing difeafes by the judicious application of different kinds of factitious air. For the convenience of fuperintending this inftitution he refided at Clifton, and in 1794 formed a matrimonial connection with a lady of the juftly celebrated Edgeworth family. From this time his medical publications became numerous, and as a phyfician his advice was in high eftimation; and he was confulted by perfons in diftant parts, who are faid to have derived great benefit from his prefcriptions. Although his pneumatic inftitution failed with refpect to the degree of fuccefs which he might augur, and proved of temporary duration, it ferved to bring into notice the prefent fir Humphry Davy, one of the moft eminent philofophers of our time, whofe talents, reftricted in their exercife to a remote town in Cornwall, caufed him to be engaged as its manager. In the year 1806, Dr. Beddoes was attacked with fome affection of the liver, which, after fubfiding for a time, returned with a difeafe in the cheft in 1808, and rapidly increafing terminated in his death on the 24th of December, before he had completed his 49th year. Although his manner, fays his biographer, was cold and repulfive, he poffeffed kind and tender feelings; and in the relations of domeftic and private life his conduct was unexceptionable. Stock's Memoirs of the Life of Thomas Beddoes, M.D.

BEDFORD, col. 3, l. 4, *r.* In 1811, the borough contained 940 houfes, and 4605 perfons; 2057 being males, and 2548 females.

BEDFORD, a townfhip of America, &c. l. 2, for 898 *r.* 1296.

BEDFORD, in Middlefex county, &c. l. 2, for 523 *r.* 592.

BEDFORD, *New*, l. 2, for 3313 *r.* 5651.

BEDFORD, in New York, l. 2, for 2470 *r.* 2374, with 241 electors, in 1810. Add—Near the centre of this town is the village of Bedford, where the courts for the county are held one half of the time, and the other half at White Plains. Here are, a court-houfe and prifon, a Prefbyterian church, an academy, and a fmall number of houfes.

BEDFORD, a county of Pennfylvania, l. 4, for 13,124, including 46 flaves, *r.* 15,746; fubjoin after 1795—it contains 547 inhabitants.

BEDFORD, a townfhip in the fame county, includes 1352 inhabitants.

BEDFORD, a county of Virginia, &c. l. 5 and 6, for 10,531 *r.* 16,148, and for 2754 *r.* 6147.

BEDFORD, a county of Weft Tenneffee, having 8242 inhabitants, including 1180 flaves.

BEDFORDSHIRE, col. 2, l. 8 and 9, *r.* The county, in 1811, contained 13,286 houfes, and 70,213 perfons; 33,171 being males, and 37,042 females: 9431 families employed in agriculture, and 4155 in trade and manufactures.

BEDLIS, or BETLIS, a large town, fituated at the opening of the ftrongeft of the paffes in the road from Diarbekir to Van and Tabriz. The river of Bedlis (the Centrites of Xenophon) is conducted by Hajy Kalifa through the plain to the fouthward of Sahert, Sard or Sared (the ancient Tigranocerta). Betlis is one of the moft ancient cities of that part of the kingdom called Kurdiftan: the caftle is on the top of a high mountain, which bounds the plain to the weft: the inhabitants of the town and neighbouring villages amount to about 26,000 Kurds, Turks, Armenians, and Syrians. The Armenians, who enjoy a confiderable portion of liberty, have four churches and four monafteries. The lands around Betlis are highly cultivated, and produce grain of feveral kinds, cotton, hemp, rice, olives, honey, truffles, and mufhrooms. The neighbourhood abounds with game, and the mountains are infefted by lions, wolves, and bears. In the vicinity are quarries of red and white marble. See BETLIS.

BEDMINSTER, a townfhip of Bucks county, in Pennfylvania, having 1199 inhabitants.

BEDRI, a town of the Perfian empire, in the pachalic of Bagdad, 13 leagues from Mendeli, and four from the foot of the mountains; is the frontier town, in this quarter, of the Turkifh empire. It is furrounded with a number of fine gardens; but its diftricts are damp and marfhy, interfperfed with pools of water, the receptacles of the torrents, which, in the fpring, are continually rufhing from the mountains.

BEER, col. 2, l. 4, from the bottom, add—For the excife duty on beer, fee ALE.

BEERING'S STRAITS, l. 7, after Cook, infert—He afterwards afcertained, that Cape Prince of Wales was the weftern extremity of the whole continent of America; and another cape was obferved to the northward of this, lying in in lat. 67° 45′, and long. 194° 51′. To this cape, captain Cook gave the name of Point Mulgrave.

BEES'-*Bread.* See PAIN *des Abeilles.*

BEGA, a land meafure in Bengal, equal to about the third part of an acre.

BEGARMEE, col. 2, l. 9, for matured *r.* weakened.

BEHABAN, in *Geography*, the capital of the mountainous diftrict of Khogiloea, in the province of Fars, in the Perfian empire, which diftrict extends from the valley of Ram Hormuz to the vicinity of Kazeroon. The town is pleafantly fituated in the middle of an extenfive valley, three miles E. of the ruins of the ancient city of Aragian, which may be feen on the banks of the river Jerahi. It is the refidence of a beglerbeg, who has a palace in the N.E. corner of the town. The walls are about three miles in circumference, and the population is faid to amount to nearly 10,000 fouls. The plain of Behaban is of confiderable extent, and highly cultivated. The rivers Tab and Jerahi flow through it. Behaban is 153 miles from Shirauz, feparated from it by a mountainous country, almoft wholly uninhabited, and infefted by banditti.

BEHRING. See BEERING.

BELCHER, l. 2, for 1485 *r.* 2270.

BELENUS. See BEL-TEIN, and BELUS.

BELFAST, in America, l. 5 *r.* 1274. Add—Alfo, a townfhip of Bedford county, in Pennfylvania, having 758 inhabitants.

BELGRADE, in America, l. 2, for Lincoln *r.* Kennebeck; add—It contains 996 inhabitants.

BELINUS. See BELUS.

BELL, col. 4, l. 40, *r.* 7th; l. 42, *r.* 610.

BELLS, *Electrical*, l. 4, *r. Plate* V. *fig.* 38.

BELLEFORTE, a townfhip of Centre county, in Pennfylvania, having 303 inhabitants.

BELLENDENA, in *Botany*, is fo called by Mr. Brown, in honour of John Bellenden Ker, efq., late Gawler, an ardent and fcientific botanift, whofe labours refpecting the natural order of *Enfatæ*, and the Liliaceous tribe, publifhed chiefly in Curtis's Magazine, and often cited by us, richly entitle him to botanical commemoration. —Brown Tr. of Linn. Soc. v. 10. 166. Prodr. Nov. Holl. v. 1. 374.—Clafs and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juff.

Eff. Ch. Petals four, regular, fpreading. Nectariferous glands none. Stamens inferted into the receptacle. Germen two-feeded. Stigma fimple. Capfule without wings, not burfting. Seeds one or two.

1. B. *montana.* Mountain Bellendena.—The only fpecies; found by Mr. Brown on the fummits of mountains in the ifland of Van Diemen, but as yet unknown in our gardens. This is a perfectly fmooth *fhrub.* The *leaves* are fcattered, flat; three-cleft at the extremity. *Spikes* terminal, racemofe. *Flowers* fcattered, rarely in pairs. *Corolla* white, foon falling. *Germen* connected by a joint with its ftalk. *Seed-veffel* coloured, furrowed along one edge. *Brown.* The infertion of the *ftamens* into the *receptacle*, and not into the *petals*, is an unique inftance in this natural order.

BELLINGHAM, in America, l. 2, for 735 *r.* 766.

BELMONT, in *Geography*, a county of the diftrict of Ohio, containing 11,097 inhabitants.

BELPRE, a townfhip of Ohio, in the county of Wafhington, having 494 inhabitants.

BELVEDIER, a town of Vermont, in Franklin county, having 217 inhabitants.

BELY BOGUE. See BOGUE, BELY.

BEMINSTER, l. 32, *r.* the town and parifh contain 445 houfes, and 2290 perfons; 1077 being males, and 1213 females.

BEMOL, l. 11, for F *r.* G; and for G *r.* B *b.*—l. 15, for Feyton *r.* Feytou.

BENDER-*Abaffi.* See GAMBRON.

BENDER-*Delem*, or *Bunder-Deelum.* Add—This is a fmall town, containing about 700 inhabitants, who trade with the merchants of Bahrein and Buffora.

BENDER-*Rigk*, or *Bunder-Reig*, (the port of Sand,) a city of Perfia, in the province of Fars, or Farfiftan, (according to M'Kinneir,) 32 miles N.W. of Bufhire or Bufheer.

BENEDICT, abbot of Peterborough, &c. l. 5, *r.* Richard I.

BENIN, l. 8, *r.* Ardrah.

BENNET, col. 1, l. *ult.* for 1696 *r.* 1646 or 1656.

BENNINGTON, l. 6, for 12,254 *r.* 15,893, and *dele* 16 flaves.

BENNINGTON, l. *ult.*, for 2400 *r.* 2524.

BENSALEM, in *Geography*, a townfhip of Bucks county, in Pennfylvania, having 1434 inhabitants.

BENSON, or BENSINGTON, a village of Oxfordfhire, on the road between Henley and Oxford. The parifh contains 185 houfes, and 825 perfons; 414 being males, and 411 females.

BENSON, l. 4, for 658 *r.* 1561.

BENTOT. See CALTURA.

BERA. See BOELE-COMBA.

BERARDI, l. 8, for Orcani, &c. *r.* Arcani Muficali Dialogo, &c.

BERBERIDES, in *Botany*, the 78th natural order of Juffieu's fyftem; the 18th of his 13th clafs: for whofe characters, fee GERANIA. This order is defined as follows.

Calyx of a determinate number of leaves, or deep fegments. *Petals* definite alfo, agreeing in number with the divifions of the calyx, and often oppofite to them; fometimes fimple; fometimes charged at the bafe with an inner petal. *Stamens* definite, as many as the petals, and oppofite to them; *anthers* fixed, burfting by a valve from the bafe upwards. *Germen* fimple; ftyle folitary or wanting; *ftigma* often fimple. *Berry* or *capfule* of one cell, often with feveral *feeds*, inferted into its bafe. *Corculum* defcending, flat, furrounded by a flefhy *albumen.* *Stem* either fhrubby or herbaceous. *Leaves* generally alternate, with *ftipulas*, or more frequently without, fimple or compound.

The genera are, *Berberis, Leontice, Epimedium;* with *Rinorea* and *Conoria*, two fhrubs in Aublet's work, little known. To thefe are fubjoined the following, as related to the order in queftion, *viz. Riana* of Aublet; *Corynocarpus* of Forfter, and Linn. Suppl.; *Poraqueiba* of Aublet, which is *Barreria* of Schreber's Gen. 598; *Hamamelis* of Linnæus; *Othera* of Thunberg; and *Rapanea* of Aublet. Thefe genera, fays Juffieu, are in fome of their characters akin, in others foreign, to the *Berberides.*

BERGEN, a county of America, &c. l. 9, for 12,601 *r.* 16,603; and for 2301 *r.* 2180.

BERGEN. Subjoin—Their number is 2690, of whom 390 are flaves.

BERGMANITE. See MINERALOGY, *Addenda.*

BERKELEY, col. 5, l. 52, to him, infert—the leffon in the burial-fervice, taken from 1 Cor. xv.; and he was commenting upon it, &c. Col. 6, l. 43, generally, infert—but not truly.

BERKHEYA, in *Botany*, (*Berckheya* is an error), a genus of compound flowers, juftly dedicated to the honour of Dr. John le Francq van Berkhey, whofe inaugural differtation, publifhed at Leyden, in 1760, is an elaborate and ample illuftration of this difficult tribe, accompanied by numerous

merous excellent figures.—Ehrh. Beitr. v. 3. 137. Schreb. Gen. 577. Willd. Sp. Pl. v. 3. 2269. Ait. Hort. Kew. v. 5. 138. (Agriphyllum; Juſſ. Gen. 190. Rohria; Thunb. Prodr. n. 52.)—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. corrected by Mr. Brown. *Common Calyx* of one leaf, clothed with many lanceolate, imbricated leaves, with ſpinous teeth, and ſpreading points; the lower ones ſhorteſt. *Cor.* compound, radiant. Florets of the diſk numerous, perfect, tubular, funnel-ſhaped, deeply five-cleft, glandular below; of the radius fewer, ligulate, lanceolate, four-toothed; glandular below, imperfect. *Stam.* in the florets of the diſk, Filaments five, capillary, very ſhort; anthers forming a tube with five teeth: in thoſe of the radius the anthers are ſhort and incomplete. *Piſt.* in the florets of the diſk, Germen turbinate, ſhort, hairy; ſtyle thread-ſhaped, longer than the ſtamens; ſtigmas two, revolute: in thoſe of the radius, Germen ſmall, with hardly any ſtyle, and no ſtigmas. *Peric.* none, except the permanent calyx. *Seeds* of the diſk ſolitary, turbinate, hairy, crowned with from ten to fifteen chaffy, lanceolate, finely ſerrated, or fringed, ſcales: of the radius none. *Recept.* flat, cellular, the cells membranous, jagged and toothed.

Eſſ. Ch. Receptacle cellular. Seeds hairy. Crown chaffy, ſerrated or fringed. Calyx of one leaf, clothed with imbricated leafy ſcales.

The ſpecies of this genus, twenty-two in Willdenow, are confined to the Cape of Good Hope and its neighbourhood. Four of them occur under this name in Hort. Kew. as green-houſe plants, flowering in ſummer; three others compoſe Mr. Brown's genus CULLUMIA, to be deſcribed hereafter. They are generally perennial, often ſhrubby. They embrace Thunberg's whole genus of ROHRIA, (ſee another genus of that name in its proper place,) and ſeveral of them have been referred by Linnæus to *Gorteria*, *Atractylis*, or even *Xeranthemum*. None has yet appeared in any of our Engliſh periodical works. We ſelect a few examples.

B. *incana*. Hoary Shrubby Berkheya. Willd. n. 1. Ait. n. 3. (B. fruticoſa; Ehrh. Beitr. v. 3. 138. ("Rohria incana; Thunb. in Act. Soc. Nat. Scrut. Hafn. v. 3. 106. t. 11." Gorteria aſteroides; Linn. Suppl. 381. Jacq. Ic. Rar. t. 591. G. fruticoſa; Linn. Sp. Pl. 1284. Atractylis fruticoſa; ibid. ed. 1. 829. Carthamus africanus fruteſcens, folio ilicis ſpinoſo, flore aureo; Walth. Hort. 13. t. 7.)—Leaves alternate, ovate, ſpinous-toothed; hoary beneath, like the ſtem. Calyx-ſcales with ſpinous teeth; hoary underneath.—Native of the interior regions of the Cape of Good Hope, in dry ſituations. The *ſtem* is various in height, with ſlender branches. *Leaves* recurved, three-ribbed, an inch and a half long, coarſely toothed; tapering at the baſe. *Flowers* terminal, ſolitary, near three inches in diameter, deep yellow.

B. *obovata*. Smooth Shrubby Berkheya. Willd. n. 2. Ait. n. 2. (Gorteria ſpinoſa; Linn. Suppl. 381. "Baſteria aculeata; Houtt. Nat. Hiſt. v. 6. 158. t. 34. f. 2." *Ait.*)—Leaves alternate, wedgeſhaped-lanceolate, ſpinous-toothed, ſmooth on both ſides. Calyx-ſcales with ſpinous teeth.—Sent from the Cape to Kew Garden, by Mr. Maſſon, in 1794. Akin to the laſt, but with narrower *leaves*, and the whole plant is ſmooth.

B. *grandiflora*. Large-flowered Berkheya. Willd. n. 7. Curt. Mag. t. 1844. (Rohria grandiflora; Thunb. Prodr. 140. "R. ilicifolia; Vahl Act. Soc. Nat. Scrut. Hafn. v. 2. 40. t. 7." Atractylis oppoſitifolia; Linn. Mant. 477. Gorteria fruticoſa; Berg. Cap. 302, but not Linn. Sp. Pl. 1284.)—Leaves oppoſite, lanceolate, three-ribbed, ſpinous-toothed; downy beneath. Calyx-ſcales with ſpinous teeth.—Native of hills about Riet-valley and Buffeljagts river, at the Cape. The *ſtem* is ſhrubby, with downy branches. *Leaves* above an inch long. *Flowers* terminal, ſolitary, large, of a full golden yellow, with a downy *calyx*.

B. *cynaroides*. Artichoke Berkheya. Willd. n. 19. Ait. n. 1. (Rohria cynaroides; Thunb. Prodr. 140. Gorteria herbacea; Linn. Suppl. 381.)—Stem-leaves alternate, claſping, fringed with prickles: radical ones elongated, entire, unarmed; downy beneath. Calyx-ſcales ovate, ſtraight, ſpinous, nearly entire.—Sent to Kew, from the Cape, in 1789, by Mr. Maſſon. The *ſtems* are herbaceous, a foot or more in height, angular, nearly ſmooth. *Leaves* rigid, or ſomewhat coriaceous; the radical ones three or four inches long, tapering at the baſe. *Calyx* ovate, ſmooth, ſtrongly armed; two or three of the lower ſcales only being fringed, like the adjoining *bracteas*.

B. *cernua*. Drooping Berkheya. Br. in Ait. n. 4. (Gorteria cernua; Linn. Suppl. 382. Willd. Sp. Pl. v. 3. 2268.)—Leaves alternate, lanceolate, claſping, ſpinous-toothed, fringed, ſmooth on both ſides. Flowers drooping. Seed-crown briſtly, fringed.—Sent from the Cape, in 1774, by Mr. Maſſon. Biennial, flowering from May to July. *Leaves* ſlightly cottony when young only. *Calyx* ſpinous.

BERKLEY, in Virginia, l. 5, *r.* 11,479, of whom 1529 are ſlaves.

BERKLEY, in Maſſachuſetts, *r.* 1014.

BERKLEY, col. 3, l. 16, for townſhip *r.* pariſh; for 90 *r.* 124; and for 658 *r.* 616, 296 being males, and 320 females. L. 18, inſert after act, in 1811; for 3450 *r.* 3808; for 9,148 *r.* 10,144; for 10,074 *r.* 11,248. Add—1711 families employed in agriculture, and 2215 in trade and manufactures; and for 19,222 in l. 21, *r.* 21,362.

BERKS, l. 9, *r.* 43,146, of whom four are ſlaves.

BERKSHIRE, in Maſſachuſetts, l. 6, *r.* 35,907.

BERKSHIRE. After Vermont, add—containing 918 inhabitants.

BERKSHIRE, col. 2, l. 20, *r.* This county contains 22,104 houſes, and 118,297 perſons; 57,380 being males, and 60,917 females: 13,409 families employed in agriculture, and 7584 in trade and manufactures.

BERKSHIRE, a townſhip of Delaware county, in the diſtrict of Ohio, containing 284 inhabitants.

BERLIN, in Vermont, for 134 *r.* 1067.—In Connecticut, add—the number of inhabitants, in 1810, was 2798.—In Worceſter county, for 512 *r.* 591.—In Somerſet county, inſert—the number of inhabitants, in 1810, was 330.

BERNACCHI, l. 13, *r.* when he was paſt his meridian.

BERNARD, ST., a pariſh of the territory of Orleans, in the county of Orleans, containing 1020 inhabitants, of whom 382 are ſlaves.

BERNARDSTOWN, l. 2, *r.* 1879; l. 4, *r.* 811.

BERNE, a townſhip of the diſtrict of Ohio, in the county of Fairfield, having 976 inhabitants.

BERNHARDIA, in *Botany*, ſo named by profeſſor Willdenow, in honour of Dr. John James Bernhardi, of Erfurt, a learned writer on Ferns, and in other reſpects an excellent cryptogamic botaniſt.—Willd. in Act. Acad. Erford. for 1802. 11. Sp. Pl. v. 5. 56. Purſh 655. (See PSILOTUM, under which name we have treated of this genus in due order.) We know not whether any other genus be already dedicated to Dr. Bernhardi, but it is to be preſumed that this act of juſtice will not long be delayed.

BERTIE, l. 5, *r.* 11,218; l. 6, *r.* 6059.

BERVIE, l. *ult.* *r.* The burgh and pariſh contain 193 houſes, houfes, and 927 perfons; 415 being males, and 512 females.

BERWICK, North. Add—The burgh and parifh contain 208 houfes, and 1727 perfons; 759 being males, and 968 females.

Berwick, col. 3, l. 26, infert—in cruives. Add—The town and county of Berwick-upon-Tweed, by the parliamentary return of 1811, contained 934 houfes, and 7746 perfons; 3325 being males, and 4421 females.

Berwick, a town of Adams county, in Pennfylvania, having 1799 inhabitants.

Berwick, in Maine, l. 2, *r.* 4455 for 3894.

BESANCON, l. 2 and 3, *r.* capital of Franche Compte, now of the department, &c.

BESANT, l. *ult. r.* under Henry.

BESITTOON, a long range of barren mountains, in the province of Irak, in the Perfian empire, bounding the plain of Kermanfhaw to the N. and terminating abruptly on the E. by a high and perpendicular rock, in one place cut to a fmooth furface, and projecting over the road, like a canopy. It receives its name from *fittoon*, fignifying, in Perfian, a pillar, and *be*, a negative propofition. Near its projection, on a high and inacceffible part of the rock, is a group of figures, in the form of a proceffion, of the fame age and character with thofe of Perfepolis. The ruins at this place refemble the magnificent ones of that famous city.

BESLICK, a fmall Turkifh filver coin, equal to 5 paras, the para being 3 afpers.

BESSARABIA, col. 2, l. 9, for fouth-eaft *r.* fouth-weft.

BESTIAN, or Bostana, a cape of Lariftan, in Perfia, which forms one of the moft fecure roadfteads in the gulf of Perfia, at the town of Mogoo. The extremity is about N. lat. 26° 30′, bearing from Polior N.N.E. ¾, and W. from the S. end of Kifhma. Shinaas and Boftana are fmall towns that lie between Linga and Cape Boftana.

BETHEL, in *Geography*, l. 3, *Lowermoft Bethel* is a townfhip of Northampton county, having 1392 inhabitants; and *Uppermoft Bethel*, in the fame county, has 1188 inhabitants.—After Dauphin county, add—having 2091 inhabitants; l. 4, *r.* 1041: at the clofe, add—a townfhip of Maine, in the county of Oxford, having 975 inhabitants.—Alfo, a townfhip in Bedford county, containing 1095 inhabitants.—Alfo, a townfhip of Ohio, in the county of Miami, having 506 inhabitants.—Alfo, a townfhip of Champaign county, in Ohio, having 484 inhabitants.

BETHLEHEM, col. 4, l. 10, add—Alfo, a town of New Hampfhire, in Grafton county, having 422 inhabitants; l. 13, *r.* 1738; l. 15, add—having 1118 inhabitants; l. 26, add—but by the cenfus of 1810, they are ftated to be 1436.

Bethlehem, E. and W., two townfhips of Pennfylvania, in Wafhington county; the former has 1806, and the latter 1849 inhabitants.

BETLIS. Subjoin—See Bedlis.

BEVEL Angle, l. 3, *Plate* III. Col. 3, l. 35, *r.* A *p*, B *p*.

BEVERLEY, l. *ult.* In 1811, the borough and liberties of Beverley contained 1457 houfes, and 6731 perfons; 3024 being males, and 3707 females.

BEVERLY, l. 5, *r.* 4608.

BEVERSTONE, l. 7, *r.* Edward.

BEWCASTLE. Add—The townfhip includes 35 houfes, and 198 perfons; 103 being males, and 95 females

BEWDLEY, l. *ult. r.* The borough contained, in 1811, 632 houfes, and 3454 perfons; 1583 being males, and 1871 females.

BEZOZZI, col. 2, l. 8, *r.* The eldeft, &c.; l. 18, compofition; l. 26, do.; l. 27, for the *r.* their; after delicacy, infert—there was; l. 40, infert—a labour exquifite in performance.

BIBIENA, Ferdinando-Galli, l. 12, *r.* Alexander; l. 14, *r.* generofi.

BIBLES, Latin. See *Italic* Version.

BICE. Add—See Cast.

BIDDEFORD, in America, l. 5, *r.* 1563.

Biddeford, col. 3, l. 2, *r.* 634 houfes, and 3244 perfons; 1415 being males, and 1829 females.

BIGELOVIA, in *Botany*, a genus which we here dedicate to our highly intelligent and fcientific correfpondent, Jacob Bigelow, M.D. of Bofton in New England, Rumford profeffor of Materia Medica and Botany in Harvard univerfity, author of the *Florula Boftonienfis*, publifhed in 1814; and of the American Medical Botany, with coloured plates, now publifhing periodically; works which, we are confident, will be but the forerunners of more ample and valuable communications from the fame quarter. We have felected for the commemoration of our friend an American genus, to which the name of Borya, (fee that article hereafter,) has been erroneoufly applied, and which therefore requires a new appellation. We have chofen one as indifputable as the genus itfelf, whofe fynonyms are the following.—(Borya; Willd. Sp. Pl. v. 4. 711. Purfh 22. Ait. Hort. Kew. v. 5. 365. Adelia; Michaux Boreal.-Amer. v. 2. 223. Browne Jam. 361, but not of Linnæus.)—Clafs and order, *Dioecia Diandria*. Nat. Ord. *Sepiariæ*, Linn. *Jafmineæ*, Juff.

Gen. Ch. Male, *Cal.* Perianth minute, in four deep, erect, lanceolate fegments. *Cor.* none. *Stam.* Filaments two or three, thread-fhaped, longer than the calyx, inferted into the receptacle; anthers roundifh, two-celled.

Female, on a feparate plant. *Cal.* Perianth in four deep, oblong, flightly fpreading, deciduous fegments; two oppofite ones very minute, and fometimes wanting. *Cor.* none. *Pift.* Germen fuperior, roundifh-ovate, of two cells; ftyle fhort, cylindrical, thickifh; ftigma capitate, depreffed, obfcurely cloven. *Peric.* Berry oval-oblong, of one cell, its internal furface cartilaginous and rugged. *Seed* almoft always folitary, oblong, tapering at each end, furrowed and ribbed longitudinally, with a membranous fkin; its embryo ftraight, in a horny albumen.

Eff. Ch. Male, Calyx deeply four-cleft. Corolla none. Stamens two or three.

Female, Calyx deeply four-cleft; two oppofite fegments fmalleft. Corolla none. Stigma capitate. Berry with one feed.

Obf. The defcription of Michaux, and his hint of the affinity of this genus to *Chionanthus*, have helped us to form, we truft, a correct idea of its characters. Willdenow had feen fpecimens of Browne's *Adelia*, and he probably had the fanction of the able M. Richard for uniting it with that of Michaux, the latter having already fo decided this queftion; nor do we fee any reafon for a different opinion.

The fpecies are all fhrubby, with oppofite, undivided, moftly entire, fmooth *leaves*, and minute, tufted, bracteated, *flowers*. The *fruit* is probably not eatable.

1. B. *caffinoides*. Elliptical Bigelovia. (Borya caffinoides; Willd. n. 1. Adelia n. 1; Browne Jam. 361. t. 36. f. 3.)—Leaves ftalked, obovate, obtufe, coriaceous, revolute; reticulated with veins beneath.—Native of the Weft Indies. Common on low gravelly hills, eaftward of Kingfton, in Jamaica. Sometimes eight or ten feet high, with

with flender leafy *branches*. *Flowers* in little axillary tufts, or clufters. *Leaves* about an inch and a half long, fmooth, entire. *Br.*

2. B. *porulofa*. Pierced Bigelovia. (Borya porulofa; Willd. n. 2. Purfh n. 1. Ait. n. 1. Adelia porulofa; Mich. Bor.-Amer. v. 2. 224.)—Leaves feffile, oblong-lanceolate, obtufe, coriaceous, revolute; dotted beneath.—On the coafts of Georgia and Florida. The *leaves* are rufty, and as if pierced with little dots, beneath. *Michaux*.

3. B. *liguftrina*. Privet-leaved Bigelovia. (Borya liguftrina; Willd. n. 3. Purfh n. 2. Ait. n. 2. Adelia liguftrina; Mich. Bor.-Amer. v. 2. 224.)—Leaves oblong-lanceolate, fomewhat membranous, entire, on fhort ftalks. Berry roundifh-ovate.—Native of thickets and woods about rivers, in the countries of the Illinois, Tenneffee, &c. flowering in July and Auguft. This has the habit and foliage of our Privet. *Michaux*.

4. B. *acuminata*. Pointed Bigelovia. (Borya acuminata; Willd. n. 4. Purfh n. 3. Ait. n. 3. Adelia acuminata; Mich. Bor.-Amer. v. 2. 225. t. 48.)—Leaves ovato-lanceolate, membranous, ftalked, flightly ferrated, acute at each end. Unripe berry oblong, taper-pointed.—On the banks of rivers in Carolina and Georgia. The taper lateral *branches* appear to form fomething like thorns. The *leaves* are an inch and a half long. *Male flowers* feveral together, in fmall feffile tufts, encompaffed with feveral ovate *bracteas*; *female* ones ftalked, very fmall. *Berries* pendulous, elliptic-oblong, near an inch in length.

The three latter fpecies are recorded by Mr. Aiton, to have been brought into England by Mr. John Lyon; the *porulofa* in 1806, the two others in 1812. They are hardy fhrubs, but do not appear to have yet flowered.

BIGNONIÆ, the 45th order in Juffieu's fyftem; the 12th of his 8th clafs, whofe characters are given at GENTIANÆ. The following is that author's definition of the order before us.

Calyx divided. *Corolla* moftly irregular, with four or five lobes. *Stamens* ufually five, one of which is, for the moft part, abortive, or imperfect. *Style* one; *ftigma* either fimple or two-lobed. *Fruit* of two cells; fometimes capfular, with many feeds, and with two perfectly feparate valves; the feed-bearing partition oppofite or parallel to the valves, and feparable therefrom: fometimes coriaceous or woody, burfting at the top only, with but few feeds, the feed-bearing partition a continuation of the valves, not feparable, and often fending out a flight wing, dividing each cell into two. *Corculum* unattended by *albumen*. *Stem* herbaceous, fhrubby, or arboreous. *Leaves* oppofite, rarely alternate.

Sect. 1. *Fruit capfular, bivalve. Stem herbaceous.*

Chelone and *Sefamum*, with Juffieu's *Incarvillea*, Lamarck Illuftr. t. 527, compofe this fection.

Sect. 2. *Fruit capfular, bivalve. Stem arboreous or fhrubby.*

Millingtonia of Linnæus; *Jacaranda*, *Catalpa*, and *Tecoma* of Juff. with *Bignonia* of Linnæus.

Sect. 3. *Fruit coriaceous, almoft woody, opening at the top. Stem herbaceous.*

Tourretia of Dombey and Juff.; *Martynia*, *Craniolaria*, and *Pedalium* of Linnæus.

Mr. Brown, Prodr. Nov. Holl. v. 1. 470, retains the fecond fection only, under the name of *Bignoniaceæ*, to which he adds the genus SPATHODEA. See that article.

BIGONCIA, in *Commerce*, a liquid meafure in Venice. See AMPHORA.

BILE, *Chemical properties of*. Bile has been lately denied by Berzelius to contain a refinous or adipocirous matter, as had been maintained by former chemifts. The fubftance peculiar to bile, or, as it is denominated by him, the *biliary principle*, has an exceffively bitter tafte, followed by fome fweetnefs. Its fmell is peculiar, and the colour in moft animals varies from green to greenifh-yellow. It is foluble in water, and its folubility is not in the leaft promoted by the alkali of the bile, fince when the alkali is neutralized by any acid, the peculiar matter does not feparate. It likewife diffolves in alcohol in all proportions. Like the albuminous materials of the blood, of which this peculiar matter is compofed, it will unite with acids producing two compounds of two degrees of faturation, and hence of folubility. The dilute acetic acid which gives foluble compounds with the albumen of the blood, does the fame with the peculiar matter of the bile; and hence this matter is not precipitated on adding this acid to bile, though it falls down on the addition of the fulphuric, nitric, or muriatic acids. It is this fparingly foluble compound of biliary matter with a mineral acid which has been miftaken by many chemifts for a refin, fince it poffeffes the external characters of a refin, melts when heated, diffolves in alcohol, and is again partly precipitated by water. The alkalies, alkaline earths, and alkaline acetates, decompofe and diffolve it; the former by depriving it of its combined acid, the latter by furnifhing it with acetic acid, which renders it foluble in water.

The peculiar matter of bile will alfo combine with many of the metallic oxyds. The degree of the folubility poffeffed by the compound of acid and biliary principle, varies according to the length of time that the bile has been kept, and alfo according to the fpecies of the animal.

The biliary matter may be obtained in a ftate of purity by mixing frefh bile with fulphuric acid diluted with three or four times its weight of water. A yellow precipitate firft appears, which is to be allowed to fubfide, and then removed: more acid is then to be added as long as any precipitate is formed; heat the mixture gently for fome hours, and afterwards decant the fluid part, and thoroughly wafh the green mafs left. This green refinous-like mafs reddens litmus, and is partially and fparingly foluble in water. It may be deprived of its acid either by the carbonate of barytes, or by the carbonate of potafh or lime, and thus obtained pure. It is now foluble in water, and forms a green folution, having all the properties of bile. It is infoluble in ether, which converts it into an adipocirous mafs. When burnt it yields no ammonia, and confequently contains no azote.

The following are the refults of Berzelius's analyfis of bile:

Water - - - - - - -	907.4
Biliary principle defcribed above -	80.0
Mucus of the gall-bladder, &c. diffolved in the bile - - - - - -	3.0
Alkalies and falts, common to all fecreted fluids - - - - - - -	9.6
	1000.0

The bile of other animals has been but imperfectly examined. It refembles in its general characters the human bile above-mentioned.

BILLARDIERA, in *Botany*, fo named by the writer of this, in honour of his friend James Julian la Billardiere, (or, as it is now written, Labillardiere,) M.D. author of *Icones Plantarum Syriæ Rariorum*, the fruits of his journey to the Levant, in 1786; and fince much better known by his valuable *Novæ Hollandiæ Plantarum Specimen*, in two volumes folio, with many plates. An account of his voyage to New Holland, in fearch of the unfortunate Lapeyroufe, contains

contains alfo much botanical matter, and has been publifhed in Englifh, at London, in 1802, with plates. M. Labillardiere has always diftinguifhed himfelf as a claffical botanift, of the Linnæan fchool, preferring the interefts of fcience to thofe of fyftem, and following no leader but what he conceives to be truth.—Smith Bot. of New Holl. 1. Labill. Nov. Holl. v. 1. 64. Willd. Sp. Pl. v. 1. 1150. Ait. Hort. Kew. v. 2. 39.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. uncertain. Akin to *Pittofporum*, and therefore to the *Rhamni* of Juffieu, as they ftand at prefent. *Salifb.*

Gen. Ch. *Cal.* Perianth inferior, of five lanceolate, coloured, equal, deciduous leaves. *Cor.* Petals five, inferted into the receptacle, alternate with the calyx, and twice as long, linear-lanceolate, erect; their claws more or lefs converging in the form of a tube; border fpreading, acute, recurved. Nectary none. *Stam.* Filaments five, inferted into the receptacle, alternate with the petals, the length of the claws, awl-fhaped; anthers ovate-oblong, attached by the back, of two cells, burfting lengthwife, internally. *Pift.* Germen fuperior, elliptic-oblong; ftyle awl-fhaped, the length of the ftamens; ftigma obtufe. *Peric.* Berry roundifh-oblong, of two cells. *Seeds* numerous, roundifh, inferted into the central column.

Eff. Ch. Calyx of five leaves, deciduous. Petals five, alternate with the calyx, converging into a tube. Stigma obtufe. Berry fuperior, of two cells, with many feeds.

The fpecies are all flender, twining, branched *fhrubs*, with fcattered, fimple, undivided, nearly entire, more or lefs downy, *leaves*, on fhort footftalks. *Flowers* and *fruit* pendulous, on terminal ftalks.

1. B. *fcandens*. Climbing Billardiera, or Apple-berry. Sm. Bot. of New Holl. 1. t. 1. Willd. n. 1. Ait. n. 1. Curt. Mag. t. 801.—Leaves elliptic-lanceolate. Berry cylindrical, obtufe, downy.—Native of Port Jackfon, New South Wales, from whence we received fpecimens and coloured drawings, by the kindnefs of Dr. White. Sir Jofeph Banks fent feeds, or plants, to Kew, in 1790, and we have fince feen flowers and ripe fruit in many confervatories. A low *fhrub*, with varioufly twifted and climbing *branches*. *Leaves* an inch and a half or two inches long, elliptic-oblong, of a dull but not dark green; paler and moft downy beneath; their edges fomewhat wavy and reflexed, fcarcely notched. *Flowers* on hairy ftalks, pale lemon-coloured, an inch long, with a hairy yellowifh *calyx*. Germen very hairy. *Berry* above an inch in length, cylindrical, equally obtufe at each end, yellow, downy all over, full of brown feeds, its pulp foft, fweet, but rather infipid in this country, though faid, in a wild ftate, to refemble a roafted apple. The figure in the Botany of New Holland was taken from a drawing made in that country. We readily concur with our friend Dr. Sims, in Curt. Mag. p. 1507, that it is impoffible to find a name which will contraft the only known fpecies of a genus, with all that may hereafter be found, and it happens that all the *Billardieræ* are climbers. The appellation above, therefore, ferves to fhew the prefent to have been the originally defcribed fpecies. There are feveral fuch inftances in the hiftory of Linnæan genera, nor would it be allowable to alter the original fpecific name on this account.

2. B. *mutabilis*. Changeable-flowered Billardiera. Salifb. Parad. t. 48. Ait. n. 2. Curt. Mag. t. 1313.—Leaves linear-lanceolate. Berry cylindrical, obtufe, fmooth.—Native of New South Wales. Eafily cultivated in a greenhoufe, and increafed by cuttings or feeds. The *leaves* are narrower and fmoother than in the foregoing fpecies. The *flowers*, at firft of a pale greenifh-yellow, turn purple before they fall. The *germen* and *fruit* are faid to be always fmooth, the form of the latter agreeing with *B. fcandens*. *Flower-ftalks* fmooth.

3. B. *fufiformis*. Spindle-fhaped Billardiera. Labill. Nov. Holl. v. 1. 65. t. 90.—Leaves oblong-lanceolate. Flowers aggregate. Petals fpreading. Berry fpindle-fhaped, pointed, filky, dry.—Gathered by M. Labillardiere at the Cape of Van Diemen, in December. The *ftem* is generally climbing. *Leaves* fomewhat hairy, larger than in the laft. *Flowers* from two to fix at the end of each branch, forming more or lefs of a clufter, blue, the *petals* more ovate, and fpreading from the bafe, than in other fpecies. *Anthers* converging. *Berry* fmall and tapering, of a membranous texture, filky, deftitute of pulp.

4. B. *longiflora*. Blue-berried Billardiera. Labill. Nov. Holl. v. 1. 64. t. 89. Curt. Mag. t. 1507. Ait. Epit. 364.—Leaves lanceolate. Petals converging. Berry nearly globular, lobed, fmooth.—Native of the fame country as the laft. Raifed here by Meffrs. Loddiges. The *flowers* are folitary, pale yellow, longer and more tubular than in any of the reft. *Fruit* remarkably different, being fhort and roundifh, of a fine blue. Dr. Sims has well obferved, that this part affords, in the prefent genus, the beft fpecific diftinctions.

BILLERICA, l. 2, *r.* 1289.

BILLS, Exchequer. See Exchequer-*Bills*.

Bill *of Health*, an account of the health of a crew, given by the captain or mafter of a veffel.

Bills, *India*, bills drawn in India on the Eaft India company in London, and payable at the India-houfe.

Bills, *Victualling*. See Navy *and Victualling Bills*.

BILLYMEAD, a town of Vermont, in the county of Caledonia, containing 433 inhabitants.

BILSTON, l. *ult.* for 1305 *r.* 1818; and for 6914 *r.* 9646.

Bilston, l. *ult.* for 121 *r.* 110; and for 744 *r.* 762.

BIR. Add—According to M. d'Anville this place reprefents the ancient Birtha. The caravans travelling from Aleppo to Orfa pafs the Euphrates on a bridge of boats at this place, fituated 144 miles from Aleppo, and 67 from Orfa, in N. lat. 36° 58′. A tax is paid at this town, which is in a dilapidated ftate; and all travellers and merchants crofs the Euphrates, which is here deep and rapid, and about 130 yards broad.

BIRDS, *Anatomy of*. The references to the plates to be expunged. Col. 7, l. 33, after another, infert—a good inftance of which is found in, &c. ending heron; l. 35, *r.* The bulbus in the oftrich is a long narrow band lying on the front of the ftomach. The ftructure, &c.; l. 53, *dele* like other, &c. to fecretion. Col. 9, l. 42, for fuperficial view *r.* flight examination. Col. 11, l. 20, after inteftine *dele* to ventricle, l. 34; and infert—If the cavity of the ftomach in the *heron* be diftended with any tranfparent fluid and held up to the light, the zone of gaftric glands will be plainly feen through its coats. If Spallanzani had employed this expedient, he could not have denied a diftinct glandular ftructure to the heron. The inferior part of the ftomach is chiefly compofed of mufcular fibres, fpreading in a radiated manner from a lateral aponeurofis, which fupplies the place of the great tendons of the digaftric mufcle. The fecond cavity or ftomach in the heron is a fmall round bag, furnifhed only with circular mufcular fibres; l. 35, for ftraight *r.* contracted. Col. 13, l. 14, *dele* fo; l. 15, after refpect *dele* to the end of the paragraph. Col. 14, l. 15, *dele* after adjoining to the end of the paragraph. Col. 16, l. 16 from the bottom, after receive, infert—fome of. Col. 19, l. 28 from the bottom, infert after by—one of the ableft ableſt chemiſts, &c. Col. 20, l. 26 from the bottom, *dele* as in mammalia. Col. 31, l. 22 from the bottom, *dele* bronchiæ, &c. to cells, and inſert—and the branches of the air-tubes. Col. 32, l. 28, for facks *r.* facs. Col. 35, l. 11, for of *r.* off. Col. 36, l. 7 from the bottom, *r.* like the air contained in the ſwimming bladder of fiſhes, with reſpect to the water. Col. 47, l. 17, *r.* quadrupeds. The trunk, &c. Col. 51, l. 13 from the bottom, *dele* from urine to the end of the paragraph.

Bird, in *Geography*, a townſhip of Adams county, in the diſtrict of Ohio, containing 1442 inhabitants.

BIRMINGHAM. Add—In 1811, the town of Birmingham contained 16,653 houſes, and 85,753 perſons; 40,518 being males, and 45,235 females: 589 families employed in agriculture, and 17,294 in trade and manufactures.

Birmingham, a townſhip of Delaware county, in Pennſylvania, having 586 inhabitants.—Alſo, a townſhip in Cheſter county, of the ſame ſtate, having 200 inhabitants.

BISHOP's Castle, l. *ult.* *r.* The borough, in 1811, contained 288 houſes, and 1367 perſons; 651 being males, and 716 females.

Bishop's *Stortford*, col. 2, l. 36, *r.* The pariſh contains 479 houſes, and 2630 perſons; 1255 being males, and 1375 females.

BISLEY, l. *ult.* for 922 *r.* 1022; and for 4227 *r.* 4757.

BISMUTH, in *Chemiſtry*. There ſeems to be but one oxyd of this metal. What was formerly termed the *magiſtery of biſmuth*, and conſidered as a peroxyd, has been demonſtrated by Bucholz to be a compound of the oxyd of biſmuth and nitric acid.

Dr. Thomſon has determined 88.75 to be the combining weight or weight of the atom of biſmuth. According to this determination, the oxyd of biſmuth will conſiſt of

$$\left.\begin{array}{ll}\text{Biſmuth} & 100\\ \text{Oxygen} & 11.2672\end{array}\right\}\text{ or } \textit{per cent.} \text{ of }\left\{\begin{array}{l}89.87\\ 10.13\end{array}\right.$$

From the above number, and from the known weights of the different acids, the compoſition of all the ſalts of biſmuth can be accurately aſcertained. See Proportions, *Definite*, and Atomic *Theory*, *Addenda*.

BISON, in *Zoology*. See Bos and Urus.

BISSEXTILE, col. 2, l. 22, *r.* 1752.

BISTAM, inſert—or Bistan. Add—See Sumnum and Sharut.

BISTINEAU, in *Geography*, a lake of Louiſiana, formed by the agency of Red river, which has raiſed a bank of earth and ſand acroſs the lower extremity of a valley that ſerves to confine the waters between the hills at all ſeaſons, and to produce this lake. The land along its banks riſes into hills from 100 to 200 feet of elevation, clothed with pine, oak, and various other trees, that afford agreeable proſpects. The eaſtern range, more broken than the weſtern, abounds more with petrifactions; and along the margin of the water, are found the white-thorn, hawthorn, and other dwarf trees, which form an elegant natural border. Many ſmall prairies, eight or ten acres in extent, ſpread themſelves over the projecting banks, and diverſify this wild, uncultivated, but romantic ſcene. This lake furniſhes evidence of the continual change effected in theſe alluvial regions, by the ſlow but unceaſing action of water. The average depth of the water is from fifteen to twenty feet; and in the deepeſt part of the lake preſents to view cypreſs-trees of various ſizes that are dead, and the remains of which, reſiſting the action of air and water, atteſt the ancient ſituation of the country. Darby's Louiſiana.

BIT, in *Commerce*. Add—1 bit being worth $5\frac{5}{11}$ ſterling, as 10 bits and 5*d.* currency make a dollar.

BITTER Principle, *Natural and Artificial*, in *Chemiſtry*. This name has been given by chemiſts, and eſpecially by Dr. Thomſon, to different principles, extracted from various vegetables, particularly from *quaſſia*, *cocculus indicus*, *ſquills*, and ſome others. Though the characteriſtic property of theſe ſubſtances be their bitter taſte, yet this appears to be almoſt the only particular in which they all agree. The bitter principle of quaſſia, according to Dr. Thomſon, is of a browniſh-yellow colour, ſomewhat tranſparent, of an intenſely bitter taſte, ſoluble in water and alcohol, has no effect on vegetable blues, and is little affected by re-agents; the nitrate of ſilver, and acetate of lead, being the only ones that precipitate it from its ſolution. It may be obtained by digeſting quaſſia for ſome time in water, and evaporating the ſolution formed to dryneſs. The bitter principles extracted from *colocynth*, *brionia alba*, and from *wheat-flour*, ſeem to poſſeſs properties analogous to the above. The bitter principle from *cocculus indicus*, which has been named Picrotoxin, is deſcribed under that article.

The bitter principle of ſquills is white and tranſparent. It is ſoluble in water and alcohol, and rapidly attracts moiſture from the atmoſphere. Its taſte is intenſely bitter; though it uſually retains a little ſaccharine matter with great obſtinacy. It was obtained by Vogel by evaporating the juice to dryneſs, and heating it with alcohol; the tannin taken up by the alcohol was ſeparated by the acetate of lead, and thus the bitter principle, obtained in the ſtate above deſcribed, combined with a little ſugar, from which it was found impoſſible to entirely free it. The bitter principle of coffee principally differs from the preceding by the property it poſſeſſes of ſtriking a green colour with iron, and of precipitating that metal from concentrated ſolutions.

According to the experiments of Bouillon la Grange, a ſubſtance not much unlike the above exiſts in the flowers of the *arnica montana*, *abſinthium vulgare*, *juniperus ſabinus*, *ruta graveolens*, *anthemis nobilis*, and *achillea millefolium*.

The *artificial bitter principle* ſeems to have been firſt formed by Hauſſman from indigo, though he miſtook its nature. Welther afterwards obtained it from ſilk, aſcertained its properties, and gave it the name of *yellow bitter principle.* It was afterwards obtained by Bartholdi from the white willow. Mr. Hatchett formed it, during his experiments upon artificial tannin, by heating indigo with nitric acid; and about the ſame time Fourcroy and Vauquelin procured it by the ſame means, and examined its properties. M. Chevreul ſuppoſes it to be a compound of nitric acid and a vegetable ſubſtance, probably of an oily nature. Its colour is deep yellow, and its taſte intenſely bitter. It is ſoluble in water and alcohol. It cryſtallizes in elongated plates, and poſſeſſes many of the properties of an acid, combining with alkaline ſubſtances, and forming cryſtallizable ſalts poſſeſſing peculiar properties.

The *artificial tannin* itſelf is by ſome chemiſts conſidered as little better than a variety of the bitter principle. See Tannin, *Artificial.*

BITTERN. See Water.

BITUMINOUS *Marle Slate.* See Mineralogy, *Addenda.*

BIVOUACKE, Bihouac, or *Bigvac*, Fr. formed from the German *way-wacht*, a double watch or guard, denotes a night-guard, or a detachment of the whole army, which, during a ſiege, or in the preſence of an enemy, marches out every night in ſquadrons or battalions, to line the circumvallations, or to take poſt in front of the camp, for the purpose of securing their quarters, preventing surprises, and obstructing supplies. When an army does not encamp, but lies under arms all night, it is said to "bivouacke."

BLACKBURN, l. 28, for 24 *r.* 23. Col. 2, l. 4, *r.* Blackburn township contained, in 1811, 2945 houses, and 15,083 persons; 6953 being males, and 8130 females: 45 families employed in agriculture, and 2861 in trade and manufactures.

BLACK-LAKE River, in *Geography*, a river of Louisiana, that rises in the same ridge of hills with the Saline, and uniting with it, joins the Rigolet de bon Dieu, 8 miles N.E. of Natchitochez. Here the state of Louisiana begins to rise into elevations of some considerable note. The features of a mountainous country now present themselves, ledges of a loose sand-stone rock abound, nodules of iron-ore are every where met with, and petrifactions of the most diversified forms are strewed over every slope. These petrifactions generally appear to have undergone their change from ligneous to the siliceous state in which they are found, and to have been imbosomed in an argillaceous clay, which, by induration, incloses them in its mass. Darby's Louisiana.

BLACKLICK, a township of Indiana, in the state of Pennsylvania, having 965 inhabitants.

BLACKROD, a township of Bolton parish, in the hundred of Salford, and county of Lancaster, containing 373 houses, and 2111 persons; *viz.* 1044 males, and 1065 females. See Wigan.

BLADEN, l. 2, *r.* 5671; l. 3, 1985.

BLAFFERT, in *Commerce*, a small coin at Cologne; 20 blafferts in account being = the rix-dollar specie, and 19½ blafferts being the rix-dollar current; 16 blafferts = a rader florin; 2½ blafferts = a shilling; and a blaffert = 4 albuses. There are silver blafferts, and half ditto.

BLAINVILLE, col. 2, l. 19, *r.* Serre.

BLAIR, Robert, in *Biography*, a Scotch divine and poet, was the eldest son of the Rev. David Blair, one of the ministers of Edinburgh, and chaplain to the king; and the grandson of the Rev. Robert Blair, minister of the gospel at Bangor in Ireland, and afterwards at St. Andrew's in Scotland, celebrated for his piety, and for his inflexible adherence to Presbyterianism, in opposition to those who endeavoured to establish episcopacy in Scotland. The subject of the present article was born in 1699, and after preparatory studies was ordained minister of Athelstaneford, in East Lothian, where he resided until his death, Feb. 4, 1747. The late right hon. Robert Blair, president of the court of session in Scotland, who died in 1811, was one of his sons, and Dr. Hugh Blair, (see his article,) was his cousin. His only literary production, we apprehend, was a poem, intitled "The Grave," which was long disregarded, and which, though more lately recommended to attention by Hervey, who first printed it, and Mr. Pinkerton, in his "Letters of Literature," has no claim on any high degree of commendation. It is destitute of plan, unembellished by any of the ingenious graces of poetry, and degraded by satirical strokes on physicians and undertakers, warm expressions, and ill-chosen epithets. Upon being previously submitted to Dr. Watts and Dr. Doddridge, the author had no encouragement to publish it: however, it was printed at London in 1743, and is perused by persons of a serious disposition. Biog. Dict. by Chalmers.

BLAIZE, St., *Cape*, in *Geography*. See Mossel's *Bay*.

BLANDFORD, col. 2, l. 30, *r.* contained, in 1811, 431 houses, with 2425 inhabitants; 1017 being males, and 1408 females.

Blandford, in America, l. 6, *r.* 1613.

BLANDFORDIA, in *Botany*, received its name from the writer of the present article, in honour of his grace George duke of Marlborough, at that time marquis of Blandford, an honorary member of the Linnæan Society, and one of the most ardent botanists and cultivators that this country ever possessed in any rank of life. A genus belonging to what Linnæus terms the Patrician order, was judged peculiarly eligible for this purpose; nor can any one be more distinct, few more beautiful.—Sm. Exot. Bot. v. 1. 5. Brown Prodr. Nov. Holl. v. 1. 295. Ait. Epit. 364.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Narcissi*, Juss. *Hemerocallideæ*, Brown.

Gen. Ch. *Cal.* none. *Cor.* of one petal, inferior, tubular, straight, with six marginal lobes, regular, withering. *Stam.* Filaments six, thread-shaped, inserted into the middle of the tube, decurrent, shorter than the limb; anthers ovate, two-lobed, incumbent, attached by a hood at their base. *Pist.* Germen superior, stalked, oblong, with three angles, and three intermediate furrows; style vertical, awl-shaped; stigma simple. *Peric.* Capsule stalked, prismatic, of three cells, bursting at their inner angles. *Seeds* numerous, oval, inserted along the margins of each cell, imbricated, clothed with dense bristly hairs.

Eff. Ch. Corolla inferior, funnel-shaped, straight, with six marginal segments. Filaments inserted into the tube. Capsule stalked, prismatic, of three cells. Seeds numerous, imbricated, bristly.

1. B. *nobilis*. Scarlet Blandfordia. Exot. Bot. t. 4. Br. n. 1. Ait. Epit. 364. Curt. Mag. t. 2003.—"Bracteas but half the length of the partial stalks while in flower. Leaves narrow-linear." *Br.*—Native of the neighbourhood of Port Jackson. The *root* is woody and perennial. *Leaves* all radical, four or five inches long, scarcely half an inch broad, entire, smooth, coriaceous, tapering at the base into sheathing footstalks. *Flower-stalks* radical, two or three feet high, erect, round, each bearing a very handsome corymbose *cluster*, of drooping, scarlet *flowers*; yellow, and marked with green, at the border; each near an inch and a half long, on a red partial *stalk* of the same length, at whose base are two unequal, opposite, tapering *bracteas*. *Capsule* pointed, twice the length of the permanent withered *corolla*.

2. B. *grandiflora*. Large-flowered Blandfordia. Br. n. 2. (Aletris punicea; Labill. Nov. Holl. v. 1. 85. t. 111.)—Bracteas nearly as long as the partial stalks while in flower; the inner but one-third as large as the outer.—Observed at Port Jackson by Mr. Brown, who is not quite certain of Labillardiere's plant, found at Cape Van Diemen. We have seen neither, but we should scarcely have thought the latter could be distinguished even from *B. nobilis*.

Blandfordia *cordata*, Andr. Repos. t. 343. See Galax.

BLATTA, col. 2, l. 29, after *gigantea*, add—called in the West Indies *drummer*, from the noise it makes, like a smart knocking with the knuckle upon the wainscot; l. 36, *dele* which see respectively.

BLAYNEY, Benjamin, D.D. in *Biography*, an eminent Hebrew scholar and critic, was educated at Oxford, and graduated M.A. in 1753, at Worcester college, and becoming afterwards fellow of Hertford college, took the degree of B.D. in 1768, and of D.D. in 1787, in which year he was appointed regius professor of Hebrew. As a Scripture commentator and translator, he acquired very considerable reputation. The publications by which he was distinguished were, "A Dissertation on Daniel's Prophecy of Seventy Weeks," &c. 1775, 4to.; "A New Translation of Jeremiah's Lamentations, with Notes, &c." 1784, 8vo.; "The Sign given to Ahaz, a Difcourfe on Ifaiah, vii. 14—16," &c. 1786, 4to.; "Chrift the greater Glory of the Temple," 1788, 4to.; "A New Tranflation of Zechariah, with Notes," &c. 1787, 4to. Dr. Blayney was canon of Chriftchurch, and rector of Potfhot, where he died Sept. 20, 1801, having previoufly directed by will that his critical papers fhould be depofited in the library at Lambeth.

BLEACHING, col. 10, l. 19, *r.* For an account of the progrefs of difcoveries in the new method of bleaching by the oxygenated muriatic acid, fee OXYMURIATIC *Acid Gas.*

BLECHINGLEY, col. 2, l. *ult. r.* By the returns in 1811, the borough and parifh contained 184 houfes, and 1116 perfons; 575 being males, and 541 females.

BLECHUM, in *Botany*, βληχων, an old name for *Pulegium*, or Penny-royal, applied gratuitoufly by Dr. Patrick Browne to a Jamaica plant, and retained by Juffieu. It looks, rather than founds, too much like *Blechnum.*—Browne Jam. 261. Juff. in Ann. du Muf. v. 9. 269. Brown in Ait. Hort. Kew. v. 4. 55.—Clafs and order, *Didynamia Angiofpermia.* Nat. Ord. *Perfonatæ*, Linn. *Acanthi*, Juff. *Acanthaceæ*, Brown.

Eff. Ch. Calyx in five deep equal fegments. Corolla funnel-fhaped. Capfule imperfectly two-celled, with two valves, and a contrary partition, at length feparating in portions. Seeds feveral, with awl-fhaped props. *Br.*

Thefe characters exclude Juffieu's *B. anifophyllum*, which, with *Ruellia imbricata* of Forfkall, and feveral Eaft Indian as well as tropical African fpecies, compofe Mr. Brown's new genus of *Aetheilema*, as yet, we believe, merely indicated in his Prodr. Nov. Holl. v. 1. 478. The following are the only fpecies of *Blechum* there mentioned.

1. B. *Brownei.* Denfe-piked Blechum. Juff. as above. Ait. n. 1. (Ruellia Blechum; Linn. Sp. Pl. 884. Willd. Sp. Pl. v. 3. 362. Prunella elatior, flore albo; Sloane Jam. v. 1. 173. t. 109. f. 1.)—Leaves ovate-elliptical, flightly toothed. Spikes quadrangular. Bracteas ovate, downy.—Native of the Weft Indies. Perennial. Herbaceous, decumbent, branched, two or three feet high, with oppofite *leaves*, and white *flowers* of no great beauty.

2. B. *erectum.* Upright Blechum. (Ruellia blechioides; Swartz Ind. Occ. 1068. Willd. Sp. Pl. v. 3. 362.)—Leaves oblong, fomewhat toothed, fmooth. Spikes ovate. Bracteas nearly fmooth.—Found in fhady woods, in the weftern part of Jamaica. *Stem* erect, rather fhrubby. *Flowers* blue. Willdenow mifquotes the remarks of Swartz, which indeed are not very clearly expreffed.

3. B. *anguftifolium.* Narrow-leaved Blechum. (Ruellia anguftifolia; Swartz Ind. Occ. 1070. Willd. Sp. Pl. v. 3. 363.)—Leaves linear-lanceolate. Spikes oblong. Bracteas ovate, hairy.—Native of the Caribbee iflands. Herbaceous, a foot high, with tumid joints. *Leaves* fmooth on both fides. *Flowers* fmall, blue.

BLETIA, fo named by the authors of the Flora Peruviana, after Louis Blet, a Spanifh apothecary, whofe botanical merits ought to be very great, to entitle him to fo fine, if really diftinct, a genus.—"Ruiz et Pavon Prodr. 119." Brown in Ait. Hort. Kew. v. 5. 205. (Phaius; Loureir. Cochinch. 529.)—Clafs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eff. Ch. Calyx and petals diftinct. Lip feffile, hooded. Style unconnected. Anther a terminal deciduous lid. Maffes of pollen eight or four, two-lobed.

1. B. *Tankervilliæ.* Lady Tankerville's Bletia. Ait. n. 1. Andr. Repof. t. 426. Curt. Mag. t. 1924. (Limodorum Tankervilliæ; Redout. Liliac. t. 43. Schneev. Ic. t. 5. See LIMODORUM for more fynonyms, and a defcription.)—Lip undivided, with a fhort fpur. Leaves radical, elliptic-lanceolate.

2. B. *verecunda.* Tall Bletia. Ait. n. 2. (Cymbidium verecundum; Willd. Sp. Pl. v. 4. 105. Limodorum altum; Jacq. Ic. Rar. t. 602. Curt. Mag. t. 930.)—Petals converging. Lip without a fpur; the ribs of its difk branched; middle lobe broader than long; lateral ones contracted upwards. Stalk more or lefs branched.—Native of the Weft Indies, long known in our ftoves. *Stalk* three feet high, with fpreading branches. *Flowers* crimfon, an inch broad. *Petals* forming a hood over the *ftyle*. *Furrows* of the lip yellow.

3. B. *florida.* Purple Bletia. Ait. n. 2. (Cymbidium floridum; Salifb. Prodr. 9. Limodorum purpureum; Redout. Liliac. t. 83.)—Petals fpreading. Lip without a fpur; the ribs of its difk fimple; middle lobe fomewhat wedge-fhaped; lateral ones dilated at the fummit. Stalk fomewhat branched.—Native of the warmeft parts of the Weft Indies. Twelve or eighteen inches high. *Flowers* larger than the laft, with more oblong, and more uniform, *petals* and *calyx-leaves*. Difk of the *lip* yellow.

4. B. *hyacinthina.* Hyacinthine Bletia. Ait. n. 4. (Cymbidium hyacinthinum: Sm. Exot. Bot. v. 1. 117. t. 60. Curt. Mag. t. 1492.)—Petals lanceolate, fpreading. Lip without a fpur. Maffes of pollen four, two-lobed. Stem leafy. Flowers racemofe.—Native of China, according to Mr. Ker. Of rather more humble growth than the laft, from which it differs in having terminal, not radical, *flower-ftalks*. The *flowers* too are a little larger, purplifh rather than crimfon. *Petals* and *calyx* exactly fimilar. *Lip* with four fhallow curled lobes in front.

5. B. *capitata.* Capitate Bletia. Ait. n. 5.—"Lip without a fpur; callous internally near the bafe. Stem leafy. Flowers capitate."—Native of the Weft Indies, from whence it was procured by fir Jofeph Banks, in 1795. It flowers in the ftove in June and July. We have feen no fpecimen nor figure.

Befides thefe garden fpecies, and the original Peruvian ones, whatever they may be, there are doubtlefs feveral remaining latent in every good herbarium. We have fome Nepaul *Orchideæ* from Dr. Buchanan, which may probably be referable to this genus.

BLETTERIE, l. 21, after Guyon, add—He alfo edited Mafclef's Hebrew Grammar, vindicating his method in his "Vindiciæ Methodi Mafclefianæ," annexed to his edition of the Grammar in 1731.

BLIGHIA, in *Botany*, fo named in honour of admiral William Bligh, whofe fervices rendered to botanical fcience, in the tranfportation of rare plants from remote countries, have procured him this compliment, in common with the great captain Cook.—König in Ann. of Bot. v. 2. 569. Ait. Hort. Kew. v. 2. 350.—Clafs and order, *Octandria Monogynia.* Nat. Ord. *Trihilatæ*, Linn. *Sapindi*, Juff.

Eff. Ch. Calyx in five deep fegments. Petals five, with an internal appendage. Style none. Capfule fuperior, of three cells and three valves. Seeds folitary, each fubtended by a large flefhy tunic.

1. B. *fapida.* Akee-tree. Ait. n. 1. König as above, 571. t. 16, 17. (Akee; Broughton Hort. Eaft. 1792. 10. "Akeefia africana; Tuffac Antill. 66. t. 3.")—Native of Africa, between the tropics, from whence it was tranfported to the Weft Indies in 1778. The flefhy tunic, or fupport, of the feed is faid to be a delicate article of cookery, refembling the white flefh of a chicken or frog, like which it ferves to make fricaffées for Weft Indian epicures. The

tree is large, of handſome growth, with abruptly pinnate, ample, ſmooth, entire *leaves*, and copious, ſmall, white *flowers*, in compound, axillary panicles. Some *flowers* have imperfect *ſtamens*, others an abortive *germen*. *Nectary* a glandular notched ring, ſurrounding the baſe of the germen or its rudiment. *Capſule* elliptic-oblong, three-lobed, fleſhy, variegated with red and yellow, about the ſize of a gooſe egg. *Seeds* globular, as big as cherries, dark brown, poliſhed, each half ſunk in a white, turbinate, lobed and corrugated *tunic*, of the ſubſtance of firm ſuet, larger than the ſeed, and attached laterally to the central partition of each valve.

BLIGHT, l. 25, add—See APHIS.

BLISTERS, *Fluid of*, in *Chemiſtry*. See FLUIDS, *Animal*.

BLOCKLEY. Add—It contains 1618 inhabitants.

BLOOD, *Chemical Properties of*. The chemical properties of the blood have been lately inveſtigated with conſiderable ſucceſs by Drs. Marcet and Boſtock, Brande, Berzelius, and others; with a ſummary view of whoſe experiments we ſhall here preſent our readers.

Of the ſerum.—The ſpecific gravity of the ſerum of blood has been ſtated to lie between 1028 and 1029.5. The opinion of De Haen that it contains gelatine, was firſt ſhewn to be erroneous by Dr. Boſtock in this country, and about the ſame time by Berzelius in Sweden. The principle formerly termed gelatine has been variouſly repreſented and named by different chemiſts. Thus Dr. Boſtock endeavoured to prove that it was a ſpecies of *mucus*, Mr. Brande that it was merely an *alkaline ſolution* of *albumen;* Dr. Marcet terms it *muco-extractive* matter, Dr. Pearſon an *animal oxyd*, the French chemiſts *ozmazome*, &c.; but it is to Berzelius that we owe the knowledge of its real nature. We inſert, nearly in his own words, the following account of his analyſis of the ſerum of the blood, as an excellent model for the analyſis of all albuminous fluids.

One thouſand parts of ſerum were evaporated to dryneſs till it could be eaſily reduced to powder. In this ſtate the reſiduum weighed 95 parts, and conſiſted of a yellowiſh ſemitranſparent maſs, reſembling amber. "Of this maſs," ſays he, "I digeſted 10 grammes in cold water. The albuminous portion became ſoftened and gelatinous. I ſeparated by the filter the liquid from the inſoluble part, and waſhed the latter repeatedly in boiling water. The undiſſolved albumen dried on the filter weighed 6.47 grammes, and did not give up its earthy phoſphate by ſubſequent digeſtion in muriatic acid.

"The ſolution which paſſed the filter was evaporated to dryneſs, during which thick membranes formed at the ſurface of the ſolution, and the ſolution gelatinized before it was perfectly dry. I digeſted this reſidue in alcohol whilſt it was ſtill gelatinous; the ſpirit aſſumed a yellow colour, and on evaporation left an alkaline deliqueſcent maſs, weighing .92 grammes. This conſiſted of ſoda holding albumen in ſolution, of muriate of ſoda and muriate of potaſh, of lactate of ſoda, and of an animal matter which always accompanies the lactate. This animal matter has a browniſh-yellow colour, is eaſily ſoluble both in water and alcohol, and is precipitated by tannin and ſubmuriate of lead. It is conſtantly formed, as has been ſtated, in conjunction with the lactic acid only; and its preſence may be taken as a ſure indication of the preſence of that acid.

"The portion not diſſolved by alcohol, when digeſted with water, left a freſh reſidue of albumen, weighing 1.95 grammes. The watery ſolution could not be made to gelatinize, and did not contain the ſmalleſt quantity of gelatine. Beſides the alkali, it contained an animal matter, eaſily precipitated by tannin and by oxymuriate of mercury, and which appeared to me to be extracted from the albumen by the boiling of the water, and to be analogous to the ſubſtance obtained by boiling fibrin in water." See FIBRIN.

Berzelius found only a ſlight trace of the phoſphoric acid, and none of the ſulphuric in the ſerum of ox blood; 1000 parts of which, according to him, conſiſt of

Water - - - - - - -		905
Albumen - - - - - -		79.99
Subſtances ſoluble in alcohol, *viz.* lactate of ſoda, and extractive matter - -	6.175	8.74
Muriate of ſoda and potaſh -	2.565	
Soda and animal matter only ſoluble in water - - - - - -		1.52
Loſs - - - - - - -		4.75
		1000

One thouſand parts of the ſerum of human blood conſiſt of,

According to Berzelius,

Water - - - - - - -		905.0
Albumen - - - - - -		80.0
Subſtances ſoluble in alcohol, *viz.* muriate of potaſh and ſoda - -	6	10.0
Lactate of ſoda and animal matter	4	
Subſtances ſoluble in water, *viz.* ſoda, phoſphate of ſoda, and a little animal matter - - - - -		4.1
Loſs - - - - - - -		.9
		1000

According to Marcet.

Water - - - - - - -	900.0
Albumen - - - - - -	86.8
Muriate of potaſh and ſoda - -	6.6
Muco-extractive matter - - -	4.0
Subcarbonate of ſoda - - -	1.65
Sulphate of potaſh - - -	.35
Earthy phoſphates - - -	.60
	1000

Berzelius remarks on Dr. Marcet's analyſis, "A more perfect agreement cannot be expected in the analyſis of ſubſtances ſo liable to incidental differences, particularly in the quantity of water, which in the blood depends ſo much on the proportion of liquid taken into the ſtomach. It is clear that Dr. Marcet's *extractive matter* is impure lactate of ſoda; and I muſt alſo obſerve, that the ſulphate of potaſh and earthy phoſphates found by him in the aſhes of ſerum are probably, for the reaſons above-mentioned, formed by the proceſs of combuſtion." See ALBUMEN.

Of the colouring matter or red particles of the blood.—An opinion long prevailed among chemiſts, that blood owed its red colour to iron. Badia appears to have been the firſt who pointed out the exiſtence of this metal in blood; but its preſence was more ſatisfactorily demonſtrated by Menghini, whoſe experiments were repeated and verified by ſubſequent fequent chemifts. Parmentier and Deyeux fuppofed, that the red colour depended upon the union of iron with the oxygen contained in the blood; Fourcroy and Vauquelin, who fucceeded, denied this, and afferted that it depended upon the fubphofphate of that metal. Dr. Wells, however, fo long ago as the year 1797, called this opinion in queftion, and afferted that the moft delicate tefts of iron did not indicate the prefence of that metal in the blood; that other red fubftances do not all contain iron; and that, on the other hand, other fubftances that do contain iron are not red. Hence he fuppofed, that the red part of the blood was an organized *animal* fubftance. This opinion has been lately revived by an eminent modern chemift, Mr. Brande; who afferts, contrary to almoft every other chemift, that the colouring matter of the blood yields no more iron when burnt than any other conftituent of the blood, and that confequently it cannot owe its colour to that principle. Berzelius, however, though he denies the opinion of Fourcroy and Vauquelin, that the red colour depends upon a falt of iron, agrees with moft preceding chemifts, that its afhes contain much more of this metal than thofe of either its other conftituents, that is to fay, that they contain 50 *per cent.* of oxyd of iron, while the afhes of albumen and fibrin do not yield a trace of that metal. Hence he concludes, that iron, fomehow or other, and in a manner unknown to us at prefent, probably conduces to the colour of the blood. The opinion of Berzelius, and moft modern chemifts, refpecting this principle is, that it clofely refembles albumen and fibrin in its properties. According to Berzelius, the mineral acids act upon it nearly in the fame manner as upon albumen. It is foluble alfo in dilute acetic acid, and precipitated by the pruffiate of potafh, like that principle; and hence Berzelius is inclined to confider it as a modification of albumen. Vauquelin has lately given a method by which he thinks the colouring principle may be feparated from the other principles of the blood, which is a very difficult tafk; we do not think, however, that he has been fuccefsful.

Mr. Brande tried to form a lake, by precipitating its acid folution by means of different earthy and metallic falts. Neither alumina nor oxyd of tin anfwered the purpofe well. Corrofive fublimate or nitrate of mercury fucceeded beft. Thefe gradually precipitated the colouring matter, and formed with it powders of a good red colour, not altered by expofure to the air. Mr. B. likewife made fome attempts to employ it as a principle in dyeing, but they were not attended with much fuccefs.

Some interefting obfervations have lately been made on the fize of the colouring particles of the blood by Dr. Young. According to this gentleman, they bear no proportion to the fize of the animal. Thus,

The particles of bullock's blood from beef meafured - - -	$\frac{1}{6060}$ inch
Ditto of a moufe - - -	$\frac{1}{4615}$
Do. of human blood - - -	$\frac{1}{6000}$ to $\frac{1}{3235}$
Do. of blood recently diluted from fwine - - - - -	$\frac{1}{3555}$
Do. of the fkate, about - -	$\frac{1}{1875}$.

Of the Fibrin.—The experiments of Berzelius fhew that this fubftance clofely refembles albumen in its chemical properties. We do not think it neceffary therefore to add any thing on the fubject here, but refer our readers to the article ALBUMEN. The phyfical properties of fibrin have been already defcribed under BLOOD in the Cyclopædia. According to the experiments of Gay Luffac and Thenard, fibrin is compofed of

Hydrogen - - -	7.021
Carbon - - -	53.360
Oxygen - - -	19.685
Azote - - -	19.934
	100

The *buffy coat* of blood is *fibrin.*

Of the Serofity.—This term has been generally applied to the falts and animal matters exifting in the ferum of the blood, with the albuminous principle. See the defcription of *ferum* in the prefent article.

With refpect to the blood as a whole, little has been added to our knowledge. M. Vogel has attempted to fhew, that when placed in the vacuum of an air-pump, it gives out a confiderable quantity of carbonic acid: and Dr. Gordon has afferted, that during its fpontaneous coagulation heat is emitted; but this has been denied by other obfervers, and efpecially by Dr. J. Davy.

The blood of other animals, and the blood of perfons labouring under different difeafes, have been but little examined; indeed this extenfive and important field of chemical inveftigation is almoft entirely unexplored.

BLOOM, in *Geography*, a townfhip of Pennfylvania, in Northumberland county, having 1285 inhabitants.—Alfo, a townfhip of the county of Fairfield, in the diftrict of Ohio, having 839 inhabitants.

BLOOMFIELD. Add—Alfo, a townfhip of Pennfylvania, in Crawford county, having 114 inhabitants.

BLOUNT, l. 1, infert—Eaft Tenneffee. Add—containing 8839 inhabitants, of whom 805 are flaves.—Alfo, a county of the fame ftate, having 3259 inhabitants, including 206 flaves.

BLOW-PIPE. We think it proper to notice here the important modification of this ufeful inftrument, lately contrived by Mr. Brooke, and which, by the intenfity of the heat it excites, has produced fuch interefting refults in the hands of different experimentalifts, and more efpecially of Dr. Clarke of Cambridge.

Mr. Brooke's blow-pipe confifts merely of a ftrong copper or iron air-tight box, to which are adapted a condenfing fyringe and jet-pipe, furnifhed with a ftop-cock. When ufed, the box is to be filled with condenfed air by means of the fyringe; the ftop-cock is then to be turned, and the condenfed air permitted to efcape through the jet. From the fmallnefs of the aperture of the jet, a conftant and uniform blaft is thus kept up for a confiderable time, (and by the occafional ufe of the fyringe, may be continued for any length of time whatever,) fimply by means of the elafticity of the air itfelf.

A great advantage attending the ufe of this blow-pipe is, that the box can be readily filled with any gas, or mixture of gafes, we choofe. Accordingly advantage was foon taken of this property, and a mixture of oxygen and hydrogen gafes, when inflamed as they iffued from the jet, was found to yield a more intenfe heat than any other. From the liability, however, of this mixture to explode, great caution was required in ufing it, and this led to the neceffity of fome contrivance for obviating this dangerous circumftance. Various means were foon fuggefted, moft of which were founded on the principle recently difcovered by fir H. Davy, that the inflammation of gafes will not pafs through minute apertures (fee WIRE-GAUZE): and, at length, we believe the

the inftrument has been rendered quite fafe; and, in this ftate, may be obtained of any of the philofophical inftrument makers.

The public attention was particularly excited towards this inftrument by the experiments of Dr. Clarke, who fuppofed that by its means, and the employment of the gafeous compound above-mentioned, he had fucceeded in reducing fome of the moft refractory metallic oxyds and ores. The accuracy of many of Dr. C.'s refults has indeed been fince called in queftion; but they neverthelefs demonftrate the extraordinary powers and valuable properties of this modification of the blow-pipe.

BLUEHILL, l. 4, *r.* 658.

BLUE-WATER River, a river of America, which rifes among the fouthern branches of Dock river, and empties into the Tenneffee.

BLUFF, a term ufed in N.W. America to denote a particular tract of land. The alluvion of the rivers W. of the Alleghanies is confiderably lower than the furrounding country, and is of a breadth correfponding to the magnitude of the rivers; that of the Miffouri is from 2 to 6 or 8 miles in breadth, and is for the moft part from 150 to 300 feet below the general level of the country. The afcent from this valley into the country is precipitous, and is called "the bluff;" and may confift of rock or clay. Betwixt thefe bluffs, the river runs in a very crooked channel, and is perpetually changing its bed, and the permanent beds are called the bluffs.

BOA, col. 3, l. 27, for Constrictor *r.* Serpents.

BOARD *of Agriculture.* See Society.

BOARDMAN, in *Geography*, a townfhip of Ohio, in the county of Trumbull, containing 343 inhabitants.

BOCCA, a term ufed both in the Levant and on the N. coaft of South America, on the Spanifh Main, for a *mouth* or *channel* into any port or harbour; or the entrance into a found which has a paffage out by a contrary way.

BOCKFIELD, a town of the diftrict of Maine, in the county of Oxford, containing 1251 inhabitants.

BODMIN, l. *ult. r.* In 1811, the parifh and borough contained 315 houfes, and 2383 perfons; 158 in the parifh and 1008 in the borough being males, and in the former 175 and in the latter 1042 females.

BŒBERA, in *Botany*, fo named by Willdenow, in compliment to a Ruffian botanift, of the equeftrian order. —Willd. Sp. Pl. v. 3. 2126. Purfh 559.—Clafs and order, *Syngenefia Polygamia-fuperflua.* Nat. Ord. *Compofitæ*, Linn. *Corymbiferæ*, Juff.

Eff. Ch. Receptacle naked. Seed-down of fimple hairs. Calyx double; the inner of eight leaves; outer of many.

1. B. *chryfanthemoides.* Dwarf Bœbera. Willd. n. 1. Purfh n. 1. (Tagetes pappofa; Michaux Boreal.-Amer. v. 2. 132. Vent. Hort. Celf. t. 36. Dyffodia glandulofa; Cavan. Leccion. 202.)—Native of the overflowed banks of the Miffouri and Miffiffippi, annual, flowering in Auguft and September. *Purfh.* A branched *herb*, twelve or eighteen inches high, with the habit of an *Anthemis*, befprinkled with glandular pellucid dots, full of a fœtid bitter fluid. *Flowers* of a golden yellow, with eight fmall rays. *Leaves* pinnate, toothed, narrow. Cavanilles fays this plant grows in every part of America, but efpecially in the kingdom of Santa Fé, where it is commonly called *Ruda*, on account of its offenfive fmell. Ventenat fpeaks of it as a vermifuge, and as affording a tolerably durable yellow dye.

BOERO, *dele.*

BŒUFS, *Rivière aux*, or *Ox River*, in *Geography*, is the laft and largeft branch of Ouachitta. It rifes in the angle formed between the Miffouri and Arkanfaw, and purfues a courfe to the S.W. for fome diftance, then turning fouthward for 70 or 80 miles, enters the ftate of Louifiana, and afterwards, at a fhort diftance, croffes the N.E. line of Baftrop's grant, purfues a S.W. courfe, and then refumes its direction to the fouthward, and after running about 60 miles enters Ouachitta, above the weft point of the ifland of Sicily. The Bœuf, from its fource in the Arkanfaw lake to the boundary of the ftate of Louifiana, is about 120 miles, and from thence to its mouth nearly the fame diftance, producing a length of 240 miles, independently of its windings. It is navigable as far as Prairie Mer Rouge. A ftrong brake of cane fkirts the Bœuf nearly along its whole courfe, through the ftate of Louifiana. Much land near its banks might be cultivated, but is moftly fubject to cafual inundation.

BOGAERT, l. 3, *r.* the Netherlands.

BOILING, col. 4, l. 10, after procefs, add—Under the ordinary preffure of the atmofphere, with due allowance for its variable denfity, water does not boil till it is heated to 212° Fahrenheit. However fir George Shuckburgh found, that when the barometer was at 26 inches, water boiled at lefs than 205°; but when it was at 31 inches it required before it would boil a heat of nearly 214°. Under the common preffure of the atmofphere, ether boils at 98°; alcohol at 176°; water at 212°; nitric acid at 248°; fulphuric acid at 546°; phofphorus at 554°; and mercury and linfeed-oil at 600°. From the experiments of Dr. Black upon feveral liquids in vacuo, it appears that, in general, they all boiled with about 140 degrees of heat lefs than when fuftaining the weight of the atmofphere. Vitriolic ether, if the preffure of the atmofphere be removed, will boil when 52 degrees below the cold fufficient for freezing water.

BOISSEAU, a meafure for corn, according to the old fyftem in France, which varies much in different parts of the country.

BOLAX, in *Botany*, a name of Commerfon's adopted by Juffieu, Βωλαξ means a *clod*, or *lump of earth*, which this dwarf umbelliferous genus does not ill refemble.—Juff. Gen. 226. Sprengel Prodr. Umbellif. 33. Spec. Umb. 9. (See Chamitis.)—The fpecies, though not numerous, are far from being, as yet, accurately determined, either with refpect to their permanent differences, or their fynonyms.

BOLINGBROKE, l. *ult.* for 72 *r.* 74; and for 283 *r.* 361.

Bolingbroke, *Lord.* See St. John.

BOLIN-GREEN, in *Geography*, a town of Kentucky, in Warren county, containing 154 inhabitants, of whom 51 are flaves.

BOLL, a corn meafure in Scotland, containing 4 firlots, each firlot being = 4 pecks; and 16 bolls = 1 chalder.

BOLOGNINO, a copper coin at Bologna and its neighbourhood.

BOLSOVER, l. *ult.* for 435 *r.* 244; and for 1091 *r.* 1043.

BOLTON, in America, l. 3, *r.* 249; l. 6, add—containing 700 inhabitants; l. 8, for 861 *r.* 1037.

Bolton-*le-Moors*, l. 30, add—In 1811, the townfhip of Great Bolton contained 3120 houfes, and 17,070 perfons; 7988 being males, and 9082 females. Little Bolton townfhip had 1286 houfes, and 7079 inhabitants; 3366 being males, and 3713 females.

BONAVENTURA, l. 2, *r.* Popayan.

BONDS, India, bonds iffued by the Eaft India company of 50*l.* and 100*l.* each, bearing intereft of 5 *per cent.*

per

per annum, which intereſt is paid at the India-houſe in London.

Bond, *Poſt-Obit*, a bond payable after the death of the perſon whoſe name is therein ſpecified.

BONES, *Analyſis of*, in *Chemiſtry*. The analyſis of bones was omitted under Bone, but will be found under Teeth, contraſted with the analyſis of the teeth.

Vol. V.

BOONE, in *Geography*, a county of Kentucky, containing 3608 inhabitants, of whom 656 are ſlaves.

BOONSBOROUGH, l. 2, *r*. Madiſon; and at the cloſe add—It contains 68 inhabitants, 15 being ſlaves.

BOOROOJIRD, a flouriſhing city of Perſia, in the province of Irak, the capital of a wealthy diſtrict, ſubject to the prince, Mahomed Tukkee Mirza, and containing a population of 12,000 ſouls. The diſtrict attached to its government is peopled by the tribe of Lack, who do not wander far from the ſpot to which they are partial, but ſettle in villages, and employ themſelves in the improvement of their eſtates.

BOOTH Bay, l. 5, *r*. 1582.

BORACITE. See Mineralogy, *Addenda*.

BORAX, in *Chemiſtry*. See Boron, *infra*.

BORBI, or Burbi, in *Commerce*, a copper coin in Egypt, 8 borbi being = 6 forli = 3 aſpers = a medino, and 40 medini = a piaſtre current.

BORELLI, col. 2, l. 6, *r*. 1670.

BORON, or Boracium, in *Chemiſtry*, the peculiar elementary baſis of *boracic acid*. Sir H. Davy, in 1807, firſt decompoſed boracic acid, and obtained this principle by the agency of galvaniſm. Soon afterwards another method of obtaining it was pointed out by Gay Luſſac and Thenard, by means of potaſſium, which was ſoon verified by Davy and others. One part of pure boracic acid, previouſly melted and reduced to powder, is to be mixed with two parts of potaſſium, and the mixture put into a copper or iron tube and gradually heated till it is ſlightly red, and kept in that ſtate for ſome minutes. At the temperature of 300° the decompoſition begins, and the mixture becomes intenſely red hot, as may be perceived by making the experiment in a glaſs tube. When the tube is cold, the matter in it is to be waſhed out with water, the potaſh formed is to be neutralized with muriatic acid, and the whole thrown upon a filter. It may be waſhed and dried at a moderate heat.

Boron thus obtained is a powder of an olive-brown colour, without either taſte or ſmell. In cloſe veſſels, it may be expoſed to the moſt violent heat without being altered, or undergoing any other change than an increaſe of denſity. Its ſpecific gravity, before being heated, is leſs than 1.84, but afterwards greater. It is inſoluble in water, alcohol, ether, and oils, whether cold or hot. It does not decompoſe water even when heated in that fluid. It is a non-conductor of electricity. It undergoes no change when expoſed to common air or oxygen at low temperatures; but when heated to about 600° it takes fire, and burns with great ſplendour; and at the ſame time abſorbs oxygen, and is partly converted into boracic acid. The combuſtion, however, is ſoon ſtopped, from the coating of the boracic acid formed, which prevents the contact of the oxygen. Hence this requires to be frequently removed, by waſhing, before the whole of the boron can be burnt. The nitric acid alſo readily converts boron into boracic acid. Boron, heated with moſt of the neutral ſalts, deprives their acids of the oxygen which they contain: thus, when heated in cloſe veſſels with ſulphate or ſulphite of ſoda, borate of ſoda and ſulphur are formed. When heated with nitre or oxymuriate of potaſh, much deflagration enſues, and borate of potaſh is produced: ſo alſo the carbonate of ſoda is converted into borate of ſoda and charcoal.

There is conſiderable difficulty in fixing the proportion of oxygen with which boron combines to form boracic acid, as the reſults of Gay Luſſac, Davy, and others, differ very much. Dr. Thomſon, guided partly by theſe experiments, but chiefly by the analyſis of borate of ammonia by Berzelius, fixes the weight of the atom of boron at 6.6, and ſuppoſes it combines with two atoms of oxygen to form boracic acid. Upon this ſuppoſition, 100 parts of boron will combine with 300 of oxygen.

Boron, when heated in chlorine, takes fire, and burns with a brilliant white flame. A white ſubſtance coats the veſſel in which the experiment is made, and the boron is alſo covered with a white ſubſtance, which by waſhing is converted into boracic acid. It is probable that this white ſubſtance is a chloride of boron, but it has not been much examined.

Boron combines with *fluorine*, (ſee Fluorine,) and forms with it a powerful acid, which has been named *fluoboracic acid*. (See Fluoboracic *Acid*.) It alſo appears, according to the experiments of Gmelin, to combine with hydrogen. Deſcotils has likewiſe ſhewn that it combines with iron, and Davy with potaſſium; but, as far as it is known, it combines with no other metal. With reſpect to the nature of this ſingular ſubſtance it may be proper to mention, that ſome conſider the boron deſcribed above to be an oxyd of a metallic baſis, to which the name of *boracium* has been given.

BORONIA, in *Botany*. (See Rutaceæ.) Mr. Brown, who could not but be aware of the ill-defined limits of this order, as originally conſtituted by Juſſieu, has, in his General Remarks on the Botany of Terra Auſtralis, 13, propoſed to remove the 1ſt ſection, under the appellation of *Zygophylleæ*, naming the remainder *Dioſmeæ*, the genus *Ruta* not being a good type of the order, ſo limited. This learned Auſtralian botaniſt informs us that near 70 ſpecies have been obſerved, the greater part of them referable to our *Boronia*, *Corræa*, *Erioſtemon*, and *Zieria*, (as alſo we preſume to *Crowea*,) and to *Phebalium* of Ventenat. "Of theſe genera *Boronia* is both the moſt extenſive and the moſt widely diffuſed, exiſting within the tropic, and extending to the ſouth end of Van Diemen's iſland. Like the others, however, its maximum is in the principal parallel, at both extremities of which it is equally abundant."

BOROUGH, col. 3, l. 19 from the bottom, after London, *r*. by a writ bearing date the 12th of December, 1264, in the 49th year of the reign of Henry III.

BOROUGH-BRIDGE, l. 23, *r*. The borough and townſhip of Borough-bridge contain 131 houſes, and 747 inhabitants; 373 being males, and 374 females.

BORRAGINEÆ, in *Botany*, the 42d order in Juſſieu's ſyſtem, the 9th of his 8th claſs; for whoſe characters, ſee Gentianæ.

This order, equivalent to the Linnæan Asperifoliæ, (ſee that article,) is thus characterized.

Calyx in five deep ſegments, permanent. *Corolla* moſtly regular. *Stamens* generally five. *Germen* either ſimple or four-lobed; ſtyle one; ſtigma either cloven, or furrowed, or ſimple. *Seeds* generally four; ſometimes encloſed in a capſular or pulpy ſeed-veſſel; ſometimes naked, obliquely attached to the bottom of the ſtyle, and for the moſt part ſurrounded by the permanent calyx. *Corculum* without albumen. *Stem* in the greater number herbaceous; in a

few

few ſhrubby or arboreous. *Leaves* alternate, often harſh or rough.

Sect. 1. *Fruit pulpy.* Stem ſhrubby or arboreous.

Patagonula, *Cordia*, *Ehretia*, *Menais*, *Varronia*, and *Tournefortia*.

Sect. 2. *Fruit of one or two capſules.*

Hydrophyllum, *Phacelia* of Juſſieu, *Elliſia*, *Dichondra*, *Meſſerſchmidia*, and *Cerinthe*. DICHONDRA (ſee that article) is erroneouſly placed here.

Sect. 3. *Fruit of four naked ſeeds. Throat of the corolla naked.* Plants moſtly herbaceous and rough.

Coldenia, *Heliotropium*, *Echium*, *Lithoſpermum*, *Pulmonaria*, and *Onoſma*.

Sect. 4. *Fruit of four naked ſeeds. Throat of the corolla furniſhed with five ſcales, hollow like ſpurs, ſlightly projecting out of the corolla, at the baſe of its ſegments, gaping above.* Herbs generally with rough leaves.

Symphytum, *Lycopſis*, *Myoſotis*, *Anchuſa*, *Borago*, *Aſperugo*, and *Cynogloſſum*.

Sect. 5. *Genera allied to the Borragineæ.*

Nolana, *Siphonanthus*, and *Falkia*.

BORRERA, is dedicated by profeſſor Acharius, to the honour of Mr. William Borrer, F.L.S., one of the moſt eminent Britiſh cryptogamiſts, whoſe ſtudies have been particularly directed to the Lichen tribe, and who is alſo critically verſed, as well as ſingularly accurate, in every department of Britiſh botany.—Achar. Lichenogr. 93. t. 9. f. 3—9. Syn. 220. Sm. Prodr. Fl. Græc. Sibth. v. 2. 313.—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Shields ſtalked, coloured, with an elevated, inflexed border, of the ſubſtance of the leafy, cartilaginous, elevated, linear frond.

This genus is very natural in habit, compriſing the well-known *Lichen ciliaris* of Linnæus and its allies. Acharius defines ſeventeen ſpecies, among which ſeveral are very elegant, ſuch as *B. Trulla* from Peru, figured in Ach. Meth. t. 4. f. 6; *leucomela*, (ſee Engl. Bot. t. 2548,) and *chryſophthalma*, t. 1088.

We have ventured in Prodr. Fl. Græc. to remove hither the *Evernia prunaſtri*, Ach. Syn. 245, *Lichen prunaſtri* of Linnæus; and feel much inclined to aſſociate the whole of that genus with *Borrera*, there being only two ſpecies beſides, which are *Lichen divaricatus* and *vulpinus* of Linnæus. We really cannot perceive any diſtinctive character to keep *Evernia* ſeparate.

BORROWSTONNESS. Add—The pariſh contains 352 houſes, and 2704 inhabitants; 1102 being males, and 1602 females.

BORYA, in *Botany*, a New Holland genus, thus named by M. Labillardiere, in honour of the diſtinguiſhed botanical traveller, M. Bory de St. Vincent. This genus was firſt made public by its author in 1804. A year or two afterwards, profeſſor Willdenow publiſhed a different *Borya*, in his Sp. Pl. v. 4. 711. The former is adopted, in his *Prodromus*, by Mr. Brown, who, nevertheleſs, has admitted the latter into Ait. Hort. Kew. v. 5. 365. This can only have ariſen from the profeſſed plan of the Hort. Kew. being in general to copy Willdenow, and we truſt Mr. Brown no more intended to give his ſanction to this error, than to the adoption of ARAUCARIA, to the prejudice of the rightful DOMBEYA. (See thoſe articles.) However that may be, we feel it incumbent on us to admit the original *Borya*, againſt which no valid objection can be raiſed, having already endeavoured to find a ſuitable name (ſee BIGELOVIA) for the other.—Labill. Nov. Holl. v. 1. 81. Brown Prodr. Nov. Holl. v. 1. 286.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Aſphodeleæ*, Brown.

Eſſ. Ch. Spatha of two unequal, ſheathing, permanent valves. Corolla of one petal, funnel-ſhaped, withering; limb in ſix deep equal ſegments. Stamens inſerted into its contracted throat. Style thread-ſhaped. Stigma obtuſe. Capſule ſuperior, of three cells, and three valves, with central partitions. Seeds ſeveral.

Mr. Brown conceives the preſent genus to be not very nearly related to any, except perhaps XANTHORRHŒA, (ſee that article,) and his own *Johnſonia*. In habit it approaches ſome of the *Junceæ*, but differs in the black cruſtaceous integument of the *ſeed*, and in the ſoft, fleſhy, ſomewhat oily, *albumen*.

It conſiſts of perennial herbs, of a harſh dry texture. *Roots* compoſed of long, tough, ſomewhat ſhining fibres. *Stems* either ſimple, or divided and creeping, clothed with very crowded, aceroſe, pointed *leaves*; dilated and half-ſheathing at their baſe. *Flower-ſtalks* ſolitary, terminal, ſimple. *Head* nearly globular, encompaſſed with a few ſhort leafy *bracteas*. Scales of the *calyx* ſmooth, membranous, the outer one ſheathing the inner, which is narrower, and embraces the tube of the *corolla*.

1. B. *nitida*. Shining Borya. Labill. Nov. Holl. v. 1. 81. t. 107. Br. n. 1.—Stem much branched, taking root below, with ſimple poliſhed fibres. Flower-ſtalks ſhorter than the aſcending branches. Head ovate.—Gathered by both the diſtinguiſhed botaniſts above cited, on the ſouth coaſts of New Holland, and the adjacent iſlands, in ſandy ground. The plant is about a ſpan high, and, except the want of downy radicles, ſeems calculated to confine the blowing ſands of its dreary country, like our *Carex arenaria*, *Elymus arenarius*, &c.

2. B. *ſphærocephala*. Round-headed Borya. Br. n. 2. —"Stems ſimple, nearly erect, ſhorter than the flower-ſtalks. Head globoſe."—Gathered by Mr. Brown, in the ſame neighbourhood.

BOS, in *Zoology*, l. 13, after *ferus*, inſert — See URUS.

BOSCAWEN, l. 4, *r.* 1829.

BOSSIÆA, in *Botany*, a fine papilionaceous genus, conſecrated by Ventenat, to the memory of his countryman M. Boiſſieu-Lamartinière, who accompanied La Pérouſe in his voyage round the world, the account of which, publiſhed at Paris, atteſts the merit of this unfortunate botaniſt. —Venten. Jard. de Cels 7. Willd. Sp. Pl. v. 3. 972. Sm. Tr. of Linn. Soc. v. 9. 302. Brown in Ait. Hort. Kew. v. 4. 266.—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coriaceous, bell-ſhaped, two-lipped; upper lip largeſt, in two rounded, obtuſe ſegments; lower in three deep, lanceolate, equal ſegments. *Cor.* papilionaceous. Standard heart-ſhaped, aſcending, twice as long as the upper lip of the calyx, with a linear, convex claw. Wings half the length of the ſtandard, obovate, each with a tooth at one ſide. Keel the length of the wings, of two hatchet-ſhaped, concave, converging petals, each with a lateral tooth, and a prominence on the diſk, near the baſe. *Stam.* Filaments ten, united about half way into one ſet, ſeparate only along the upper edge; anthers uniform, ſimple, roundiſh. *Piſt.* Germen ſtalked, linear, compreſſed; ſtyle recurved; ſtigma ſimple. *Peric.* Legume ſtalked, oblong, compreſſed, nearly flat; its valves rigid, thickened at each margin; ſometimes internally ſpongy, and of many cells. *Seeds* ſeveral, oval, compreſſed, ſtalked, each with a tumid appendage.

Eſſ.

Eff. Ch. Calyx two-lipped; upper lip largeft, cloven, obtufe. Stamens all connected. Legume ftalked, compreffed, thickened at each edge, with many feeds.

1. B. *fcolopendria.* Yellow Flat Boffiæa, or Plank-plant. Sm. as above n. 2. Sims in Curt. Mag. t. 1235. (B. Scolopendrium; Br. in Ait. n. 1. Platylobium fcolopendrum; Andr. Repof. t. 191. P. fcolopendrium; Ven. Malmaif. t. 55.)—Branches compreffed, winged, toothed, leaflefs; flowering at the teeth. Stem erect. Keel naked. Upper bracteas permanent, imbricated, equal to the footftalk. Calyx very fmooth.—Native of New South Wales, from whence it was introduced, in 1792, by Lee and Kennedy. A green-houfe fhrub, flowering early in fummer. The winged *branches*, in a manner proliferous, and bearing handfome, red and yellow, ftalked, folitary *flowers*, from their numerous alternate teeth, give this fhrub a very fingular afpect. The feedling plants only bear fimple, alternate, ftalked, ovate, entire *leaves*. The *legume* of this fpecies, (and perhaps the following,) is faid by Dr. Sims to want that internal fponginefs, which, in thofe firft defcribed by botanifts, feemed to yield a good generic character. The texture of the *legume*, its thick edges, and the want of a dorfal membranous wing, are ftill abundantly fufficient to keep the genus diftinct from Platylobium. (See that article.) With refpect to the fpecific name, we muft beg leave, like Ventenat and Sims, to confider it as an adjective, comparing this fingular plant's branches to the infect called a *Scolopendra*, or Centipede. It has no connection with the vegetable genus *Scolopendrium*, and ftill lefs has it ever been fo called.

2. B. *rufa.* Red Flat Boffiæa. Br. in Ait. n. 2.—"Branches compreffed, winged, toothed, leaflefs; flowering at the teeth. Keel fringed. Upper bracteas deciduous, remote from the lower. Calyx very fmooth."—Gathered by Mr. Brown on the fouth-weft coaft of New Holland. Sent to Kew, by Mr. Good, in 1803. A green-houfe fhrub, flowering from June to September.

3. B. *heterophylla.* Various leaved Boffiæa. Venten. Jard. de Cels t. 7. Willd. n. 1. Sm. n. 1. Br. in Ait. n. 3. (B. lanceolata; Curt. Mag. t. 1144. Platylobium lanceolatum; Andr. Repof. t. 205. P. ovatum; ibid. t. 266, (not 276,) according to Mr. Brown.)—Branches leafy, compreffed. Leaves elliptical, obovate, or linear, flat. Legume of many cells, with fpongy partitions.—Native of New South Wales. Imported by Lee and Kennedy in 1792. A branched bufhy fhrub, flowering moft part of the fummer. The *branches*, though nearly flat, are not dilated like the foregoing, nor are they either toothed, or denudated. The *leaves* are variable in figure, but on full-grown plants ufually linear, alternate, on fhort ftalks. *Flowers* axillary, folitary, ftalked, large, yellow with a crimfon keel, very ornamental.

4. B. *linophylla.* Narrow-leaved Boffiæa. Br. in Ait. n. 4.—"Branches leafy, compreffed. Leaves linear; recurved at the margin. Legume of one cell."—Obferved by Mr. Brown, on the fouth-weft coaft of New Holland. Sent by Mr. Good to Kew, in 1803, where it is faid to flower from July to September.

5. B. *proftrata.* Procumbent Boffiæa. Br. in Ait. n. 5. (B. ovata; Sm. n. 3, excluding the fynonyms.)—Branches round, leafy. Stem procumbent. Leaves oval, fmooth. Stipulas fhorter than the footftalks. Legume of a fingle cell.—Sent from Port Jackfon, by Dr. White, in 1793. Mr. Good is mentioned as having fent it to Kew in 1803. The *ftems* are a fpan long. *Leaves* nearly uniform, a quarter of an inch long, their edges thickened, wavy, and fomewhat crenate. We had miftaken this for the *Platylobium ovatum* of Andrews, t. 266, but Mr. Brown has convinced us of our error.

6. B. *cinerea.* Downy Sharp-leaved Boffiæa. Br. in Ait. n. 6.—"Branches round, leafy. Stem erect, much branched. Leaves ovato-lanceolate; rough above; downy beneath; recurved at the margin."—Found by Mr. Brown in Van Diemen's ifland, and fent in 1805 to Kew, where it flowers from May to July.

7. B. *microphylla.* Little-heart-leaved Boffiæa. Sm. n. 5. Br. in Ait. n. 7. (Platylobium microphyllum; Sims in Curt. Mag. t. 863.)—Branches round, leafy, fpinous-pointed. Leaves inverfely-heartfhaped, or wedge-fhaped.—Native of New South Wales, from whence Dr. White fent us fpecimens in 1793. Mr. Caley fent feeds to fir Jofeph Banks in 1803. This fpecies is faid to have flowered at the prefent duke of Marlborough's, at White Knights, in 1805. The *flowers*, though fmaller than in fome other fpecies, are fo numerous, and fo prettily variegated with yellow, purple, and red, as to render this a very ornamental plant. The *leaves* are fhorter than the flowers, veiny, fmooth and entire, very abundant. The tips of the branches finally become fpinous.

Mr. Brown is probably furnifhed with more fpecies of this handfome genus, which have not yet made their appearance in the gardens.

BOSSINEY. Add—The parifh of Tintagel, in which this borough is fituated, contained, in 1811, 141 houfes, and 730 perfons; 339 being males, and 391 females.

BOSTANA. See Bestian.

BOSTON. At the clofe, *r.* the parifh of Bofton, in 1811, contained 1772 houfes, and 8180 perfons; 3805 being males, and 4375 females.

Boston, in Maffachufetts, l. 17, after augmented, infert—By the cenfus of 1810, Bofton, Chelfea, and the iflands within and without the jurifdiction of Bofton, included a population of 34,381 fouls. The former iflands are, Noodle's, Hog, Apple, Deer, Long, Spectacle, Governor's including Fort Warren, and Fort Independence: the latter are, Greene, Thompfon's, Rainford's, George's, Great Brewfter, Outer Brewfter, Lighthoufe, and Calf ifland. Bofton itfelf is ftated as containing 33,250 inhabitants.

Boston, a town of the diftrict of Ohio, in the county of Champaign, having 616 inhabitants.

Boston, *New*, l. 12, for 1202 *r.* 1619.

BOSWELLIA, in *Botany*, "in memory of the late Dr. John Bofwell, of Edinburgh."—Roxb. Coromand. v. 3, 4.—Clafs and order, *Decandria Monogynia.* Nat. Ord. *Meliis*, Juff. *affine.*

Eff. Ch. Calyx inferior, five-toothed. Petals five. Nectary a crenate ring furrounding the bafe of the germen. Capfule triangular, of three cells and three valves. Seeds folitary, winged.

1. B. *glabra.* Smooth Bofwellia. Roxb. as above, t. 207. (Canarium odoriferum; Rumph. Amboin. v. 2. 156. t. 50. Gugulapootfchittoo of the Telingas.)—Leaflets fmooth, with fhallow ferratures.—Native of the higheft mountains on the coaft of Coromandel, flowering in the cool feafon, and cafting its leaves in October. This is one of the largeft trees of that country; its *wood* hard, heavy, and durable. The wounded *bark* yields a fort of pitch. *Leaves* crowded at the ends of the branches, a fpan long, pinnate with an odd one; *leaflets* all uniform, oppofite, ovate-oblong, an inch and a quarter in length. *Flowers* white, in aggregate, terminal, interrupted, fpreading clufters, fhorter than the leaves, and coming before them. *Nectary* red. *Anthers* oblong, yellow. *Capfule* oval, about half an inch long.

2. B. *hirfuta.* Hairy Bofwellia. (Canarium odoriferum

ferum hirfutum; Rumph. Amboin. v. 2. 157. t. 51, according to Dr. Roxburgh; but the leaflets are reprefented entire.)—Leaflets downy, deeply ferrated.—On the Ballagaut mountains. The *ftamens* of this are inferted on the exterior margin of the *nectary*. *Roxburgh.*

BOTETOURT. Add—By the cenfus of 1810, it contained 13,301 inhabitants, of which 2275 are flaves.

BOTRYCHIUM, in *Botany*, a name derived from *βότρυς, a bunch of grapes*, which the fructification of this genus imitates in miniature.—Swartz Syn. Fil. 171. Willd. Sp. Pl. v. 5. 61. Brown Prodr. Nov. Holl. v. 1. 164. Ait. Hort. Kew. v. 5. 496. Sm. Compend. 155. Purfh 655. (Botrypus; Mich. Bor.-Amer. v. 2. 274. Ofmunda; Lamarck Illuftr. t. 865. f. 1.)—Clafs and order, *Cryptogamia Filices.* Nat. Ord. *Filices*, Linn. Juff.

Eff. Ch. Capfules nearly globofe, naked, fmooth, without a ring, united to the ftalk of a compound fpike, diftinct, each of one cell, and two valves connected behind, burfting tranfverfely in front.

We have already alluded to this genus under OSMUNDA, from which it was firft feparated by profeffor Swartz. Ten fpecies are defcribed in Willdenow, to which we have two to add.

1. B. *Lunaria.* Common Moonwort. Sw. n. 1. Willd. n. 1. Fl. Brit. n. 1. (Ofmunda Lunaria; Linn. Sp. Pl. 1519. Sm. Fl. Brit. 1107. Engl. Bot. t. 318. Bolt. Fil. 4. t. 4. Fl. Dan. t. 18. f. 1. Lunaria minor; Ger. Em. 405. Matth. Valgr. 254. Camer. Epit. 643.)

B. Lunaria minor ramofa; Camer. Epit. 644.

Frond fimply pinnate; leaflets crefcent-fhaped.—Native of dry hillocks, or open heaths, throughout the cooler parts of Europe, bearing capfules in June. *Root* perennial, with many ftout fimple fibres. *Frond* folitary, from a torn membranous fheath, erect, three to fix inches high, fmooth, pale green, confifting of a fimply pinnate *leaf*, two inches long, with fix or feven pair of obliquely imbricated, fan-fhaped, entire or notched, *leaflets*. From the bafe of the *leaf* fprings a ftout *ftalk*, about the fame length, bearing a twice or thrice compound, unilateral, fmooth *fpike* of *capfules*, each about half the fize of a muftard-feed; all firmly united, in two feffile rows, with the linear flat rib, or common *receptacle*.

2. B. *rutaceum.* Rue-leaved Moonwort. Sw. n. 2. Willd. n. 2. (O. Lunaria; Fl. Dan. t. 18. f. 3. Fl. Brit. γ. Lunaria racemofa minor, matricariæ folio; Breyn. Cent. 184. t. 94. Morif. fect. 14. t. 5. f. 3.)—Frond doubly pinnatifid; fegments obtufe, notched at the extremity. Fruitftalk from the bafe of the leaf.—Native of dry open fituations, in feveral parts of Europe. We are not fure of having feen a Britifh fpecimen; nor is it impoffible that a jagged variety of *B. Lunaria*, fuch as is reprefented in Breyn. Cent. t. 93, and in Morifon as above, f. 2, may have been confounded herewith. *B. rutaceum* is certainly near akin to the *Lunaria*, differing only in the compound divifion of its *leaf*, and fometimes of its *fpike*.

3. B. *matricarianum.* Feverfew-leaved Moonwort. (B. matricarioides; Willd. n. 3. Lunaria racemofa, multifido folio; Bauh. Pin. 355. Breyn. Cent. t. 95. Fl. Dan. t. 18. f. 2, media. Morif. fect. 14. t. 5. f. 26.)—Frond doubly pinnate, pinnatifid; fegments oblong, obtufe, toothed. Fruitftalk from the bafe of the footftalk.—Native of fhady fituations in Pruffia, Denmark, and Bavaria. *Willdenow.* Extremely abundant about Peterfburgh, according to the Linnæan herbarium, where are three fpecimens from thence. The more compound *leaf*, not always folitary, and efpecially the infertion of the *fruitftalk* near the root, not at the top of the *leafstalk*, furely mark this as a diftinct fpecies; which is confirmed by the plant not being of occafional occurrence, amongft the *Lunaria*, as might be expected of any variety, but plentiful in the countries where it grows at all. We have not heard of this fpecies in Britain. The fpecific name in Willdenow is a barbarous compound of Greek and Latin, fuch as we wifh botanifts, not altogether illiterate, would avoid.

4. B. *fumarianum.* Fumitory-leaved Moonwort. (B. fumarioides; Willd. n. 4. Ait. n. 1. Purfh n. 1. B. lunarioides; Sw. n. 5. "Schkuhr Crypt. 158. t. 157." Botrypus lunarioides; Mich. Boreal.-Amer. v. 2. 274. Ofmunda biternata; Lamarck Dict. v. 4. 650.)—Frond ternate; doubly pinnate; leaflets crefcent-fhaped, crenate. Fruitftalk radical.—In paftures and open woods, from New York to Carolina, bearing capfules in June. *Purfh.* Like the laft, efpecially in the infertion of its *fruitftalk*, at or near the *root*, but the *leaflets* exactly refemble thofe of *B. Lunaria*, which, with profeffor Willdenow's leave, are by no means uniformly entire.

5. B. *obliquum.* Oblique-leaved Moonwort. Willd. n. 5. Muhlenb. Cat. 98.—Frond nearly twice ternate; leaflets oblong-lanceolate, finely ferrated, unequally heart-fhaped at the bafe. Fruitftalk towards the bafe of the footftalk.—In open woods of Pennfylvania and Virginia, in June and July. Refembles the preceding very much, and is probably only a variety. *Purfh.* This author defcribes the *fpikes* as doubly pinnate; thofe of the laft only *pinnate*.

6. B. *auftrale.* Southern Moonwort. Brown n. 1.—Frond ternate; doubly pinnate; leaflets confluent, cut. Fruitftalk from the bafe of the footftalk.—Sent by Dr. White, from Port Jackfon, New South Wales; where, as well as in Van Diemen's ifland, it was gathered by Mr. Brown. *Leaflets* bluntly toothed. *Fruitftalk* pale, a fpan high, being thrice as tall as the *leaf*, into whofe darker-coloured *footftalk* it is inferted, a little above the root. The *fpike* is twice or thrice compound, fpreading; the ftalks pale. *Capfules* dark brown.

7. B. *ternatum.* Ternate Japan Moonwort. Sw. n. 6. Willd. n. 6. (Ofmunda ternata; Thunb. Jap. 329. t. 32.)—Fronds in pairs, triply pinnate; leaflets notched and ferrated. Fruitftalk from the middle of the common footftalk. Spike pinnate.—Gathered by Thunberg once only, near Nagafaki in Japan, in November. A foot high, with two large, oppofite, fpreading, ternate, then twice pinnate, *leaves*, half the height of the *fruitftalk*.

8. B. *diffectum.* Cut-leaved Moonwort. Willd. n. 7. Muhlenb. Cat. 98. Ait. n. 3. Purfh n. 3. Sprengel Crypt. engl. ed. 187. "Schkuhr Crypt. 159. t. 158." (Lunaria botryites ramofa, geranii mofchati foliis, floridana; Pluk. Amalth. 134. t. 427. f. 5.)—Frond ternate, thrice pinnate; leaflets decurrent, linear-wedgefhaped, fharply toothed at the end. Fruitftalk at the bafe of the leaf.—In paftures of open dry woods, from New York to Florida, in June. *Purfh.* We have Pennfylvania fpecimens from the late Dr. Muhlenberg, very much like Plukenet's figure, but we can difcover no effential difference between this plant and the following.

9. B. *virginianum.* Virginian Moonwort. Sw. n. 3. Willd. n. 8. Ait. n. 4. Purfh n. 4. "Schkuhr Crypt. 157. t. 156." (Ofmunda virginiana; Linn. Sp. Pl. 1519, excluding Plumier's fynonym. Lunaria americana, foliis cicutariæ modo elegantèr divifis; Morif. fect. 14. t. 4. f. 5. L. multifido folio craffo, &c.; Pluk. Mant. 120. t. 427. f. 8.)—Frond fomewhat ternate, twice pinnate; leaflets decurrent, obovate-wedgefhaped, fharply toothed. Fruitftalk at the bafe of the leaf.—In fhady woods, on a rich vegetable foil, from Canada to Carolina, in June and July.

July. *Purſh.* That author obſerves, "this is the largeſt of the ſpecies here deſcribed. It is known by the name of Rattle-ſnake Fern, probably from growing near the places where thoſe venomous animals are generally found." Our ſpecimens, one of which was gathered by Clayton, the other by Kalm, are ſcarcely ſo large as the laſt-deſcribed, from which they differ chiefly in having rather leſs compound *leaves*. The *infloreſcence* is ſomewhat hairy, as in that. Willdenow, negligently as it ſeems, changed the termination of the ſpecific name to *virginicum*, which could only cauſe trouble, and we have therefore reſtored the original.

10. B. *gracile*. Slender Moonwort. Purſh n. 5. Frond ternate, doubly pinnatifid, ſmooth; ſegments cut, acute. Spikes ſlender, pinnate, erect.—In ſhady fertile woods of Virginia, in June. This ſpecies approaches nearly, at firſt ſight, to the preceding, but is much ſmaller and more ſlender, beſides the other diſtinctions. *Purſh.* We have from Dr. Muhlenberg what anſwers to the above account, but ſhould ſcarcely have thought it diſtinct. The *infloreſcence* indeed is ſmooth, and ſimply pinnate, but this correſponds with the ſmaller ſize of every part.

11. B. *cicutarium*. Hemlock Moonwort. Sw. n. 4. Willd. n. 9. (Oſmunda cicutaria; Lam. Dict. v. 4. 650. O. aſphodeli radice; Plum. Fil. 136. t. 159. Petiv. Fil. n. 168. t. 9. f. 2.)—Frond triply pinnate; leaflets pinnatifid; terminal ones pointed. Fruitſtalk from near the baſe of the footſtalk.—Gathered by Plumier in the foreſts of Hiſpaniola. The *root* conſiſts of oblong tapering fleſhy knobs. *Frond* much larger than either of the three laſt, and eſſentially different in the nearly radical inſertion of the *fruitſtalk*. The *ſpike* is twice pinnate. Plumier records, that the Indians give the name of Serpent-herb to this, and to the *Anemia adiantifolia*, thinking them uſeful applications for the bite of a ſerpent. This may account for the appellation of Rattle-ſnake Fern given to n. 9.

12. B. *zeylanicum*. Great Ceylon Moonwort. Sw. n. 7. Willd. n. 10. (Oſmunda zeylanica; Linn. Sp. Pl. 1519. O. n. 373; Linn. Zeyl. 178. Ophiogloſſum laciniatum; Rumph. Amboin. v. 6. 153. t. 68. f. 3.)—Frond ternate; leaflets ternate or ſomewhat pinnate, lanceolate, pointed, finely crenate. Spike cylindrical, denſe; ſpikelets capitate. —Native of Ceylon and Amboyna, on the ſides of hills, in the borders of woods and thickets. The *root* is long and creeping, very deep in the ground, with numerous long fibres. *Fronds* a foot and a half or two feet high, naked, except at the very top of the *ſtalk*, from whence proceed three ſlightly-ſtalked *branches*, each of two, three, or more, equal, uniform ſmooth *leaflets*, five or ſix inches long, and one broad, partly decurrent, light green, with many fine tranſverſe veins. From the ſame point ſprings a fruitſtalk, with a denſe cylindrical compound *ſpike*, riſing rather above the leaflets, the *capſules* about three together, capitate, at the end of each ſhort partial branch.

BOTRYOLITE. See Mineralogy, *Addenda*.

BOTRYTIS, in *Botany*, ſo called from βότρυς, *a bunch of grapes*, in alluſion to the cluſters of little globular ſeeds, or ſeed-veſſels.—Mich. Nov. Gen. 212. t. 91. Perſ. Diſp. Meth. 40. Syn. Fung. 690.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Erect, capillary, forked. Seeds in terminal aggregate globules.

1. B. *cinerea*. Aſh-coloured Cluſter-mould. Perſ. n. 1. Diſp. Meth. 40. t. 3. f. 9, 10.—Aſh-coloured, branching, in broad denſe patches.—On rotten gourds, pumpkins, and cabbage-ſtalks, reſembling a common *Mucor*, till examined with a magnifier. The *globules* are diſpoſed in irregular oblong maſſes, and diſcharge powdery *ſeeds*.

2. B. *ramoſa*. Croſs-headed Cluſter-mould. Perſ. n. 2. (B. ramoſa cinerea, ſeminibus rotundis; Mich. n. 3. f. 2.) B. alba. (B. non-ramoſa alba, ſeminibus rotundis; Mich. n. 2. f. 3.) —Aſh-coloured, branching, with four-rayed ſpikes.—Very common in all kinds of corrupting ſubſtances. *Micheli.* The minute *ſtems* are more or leſs branched and forked, each *branch* terminating in a croſs, compoſed of four denſe ovate maſſes of *globules*, on ſhort horizontal ſtalks.

3. B. *ſimplex*. Simple Cluſter-mould. Perſ. n. 3. (B. comata griſea, caule ſimplici craſſiore, ſeminibus rotundis; Mich. n. 1. f. 1.)—Grey, ſimple. Spikes radiating.—On half-rotten wood, or wheat-ſtraw, in winter, not unfrequent about Florence. *Micheli.* Each plant conſiſts of a ſimple, rather firm, *ſtem*, a line or two in height, crowned with from three to ſix ovate maſſes of *globules*, on horizontal radiating ſtalks.

4. B. *ſpicata*. Oblong-ſpiked Cluſter-mould. Perſ. n. 4. (B. ſpicata griſea, ſeminibus rotundis; Mich. n. 4. f. 4.)—Grey, much branched. Spikes ovate-oblong, ſtalked, ſcattered, erect.—Found in September on the ſhady walks of the botanic garden at Florence. *Micheli.* The *ſtems* are repeatedly and irregularly branched, each branch terminating in a little oblong *ſpike* of *globules*.

5. B. *diffuſa*. Great White Cluſter-mould. Albert. and Schwein. Fung. Niſk. 362.—White, with extenſive diffuſe branches, and terminal cluſters, of about four globules each.—Found once only on half-rotten ſtalks of potatoes in November, compoſing denſe, white, cottony, fugacious maſſes, two inches or more in diameter. The *globules* diſcharge abundance of powdery *ſeeds* like ſmoke.

BOTTOMRY, col. 4, l. 23, for courſe *r.* courts.

BOVISTA, in *Botany*, a name of barbarous origin, being formed by Dillenius from the German *Boſiſt*. It is adopted by Perſoon for a genus ſeparated from Lycoperdon. (See that article.)—Perſ. Diſp. Meth. 6. Syn. Fung. 136.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Caſe ſmooth, ſeſſile, burſting irregularly at the top; its white external coat (or wrapper?) at length ſeparating in fragments. (Powder or ſeed browniſh-purple.) *Perſoon.*

The author defines four ſpecies.

1. B. *nigreſcens*, which is *Lycoperdon globoſum*, Bolt. Fung. t. 118. With. v. 4. 382, and *L. arrhizon* of Batſch, t. 29.

2. B. *plumbea*, figured in Sowerby's Fungi, t. 331, as *L. Boviſta*, and judged by that author to be but a variety of the former.

3. B. *puſilla*, "Batſch, t. 41. f. 228;" akin to the firſt, but only three lines in diameter.

4. B. *furfuracea*, figured by Micheli, Nov. Gen. t. 97. f. 6, who ſays it is common on heaths, and ſold with other fungi of this tribe, in the market, at Florence. Perſoon is doubtful of the genus of this laſt, and we ſhould ſuſpect it to belong poſſibly to *Tuber*.

Boviſta differs from *Lycoperdon* in not being elongated at the baſe into a ſort of ſtalk; but ſurely they might, without violence to nature, be united, eſpecially as the ſpecies of the preſent genus are ſo few and ſo diſputable.

BOURBON, in Kentucky, l. 2, *r.* 11,869; l. 3, *r.* 2307.

BOURN, col. 2, l. 21, *r.* In 1811, the pariſh of Bourn contained 308 houſes, and 1591 perſons; 779 being males, and 812 females.

BOURSIPPA, in *Geography*, a town of Babylonia, according to Strabo; to which Alexander retired when warned by the Chaldæans not to enter Babylon. This is ſuppoſed to be the preſent village of Bourſa, two leagues

to

to the S.E. of Hilleh, the ſcite, as it is conjectured, of ancient Babylon. On the road from hence to Meſked Ali, or Nejiff, is the tomb of the prophet Ezekiel, where they pretend to ſhew the fiery furnace of Shadrach, Meſhech, and Abednego. It is a large clumſy building, without beauty or ornament; and, like the tomb of Ezra, on the banks of the Tigris, a ſhort way above Korna, is much frequented by Jewiſh pilgrims.

BOUVARDIA, in *Botany*, ſo named by Mr. Saliſbury, in memory of Charles Bouvard, M. D. formerly ſuperintendant of the garden at Paris.—Saliſb. Parad. 88. Ait. Hort. Kew. v. 1. 245.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juſſ.

Eſſ. Ch. Calyx in four deep ſegments, with intermediate teeth. Corolla tubular. Anthers within the tube. Capſule of two ſeparable cells, with numerous bordered ſeeds.

1. B. *triphylla*. Three-leaved Bouvardia. Ait. n. 1. Saliſb. Parad. t. 88. (Houſtonia coccinea; Andr. Repoſ. t. 106. Ixora americana; Jacq. Hort. Schoenbr. v. 3. 4. t. 257. I. ternifolia; Cavan. Ic. v. 4. 3. t. 305.)—Native of Mexico. Introduced by ſir Joſeph Banks in 1794, and now become common in the Engliſh gardens, where, if planted againſt the front of a green-houſe, it will ſtand our ordinary winters, flowering from Midſummer till the end of autumn. The *ſtem* is from one to two feet high, ſhrubby, branched, downy when young. *Leaves* uſually three in a whorl, ovato-lanceolate, varying in breadth, entire, rough-edged, nearly ſeſſile. *Flowers* an inch long, bright ſcarlet, in denſe, terminal, forked *panicles*, very abundant, and extremely ſhowy, though deſtitute of ſcent.

BOW, l. *ult.*, *r.* The pariſh contains 149 houſes, and 727 perſons; 329 being males, and 398 females.

Bow, in America, l. 4, *r.* 729.

BOWDOIN, l. *ult.*, for 983 *r.* 1649.

BOWDOINHAM, l. *ult.*, for 455 *r.* 1412.

BOWLESIA, in *Botany*, ſo named by the authors of the Flora Peruviana, in honour of Mr. William Bowles, a native of Ireland, who publiſhed at Madrid, in 1775, an Introduction to the Natural Hiſtory of Spain, making a 4to. volume of 529 pages, in the Spaniſh language. This work has been tranſlated into French and Italian. The author died in Spain in 1780.—Sprengel Prodr. 24. Spec. Umbell. 13.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbelliferæ*.

Eſſ. Ch. Fruit ovate, quadrangular, briſtly; concave at the back. Umbel ſimple.

The author enumerates three certain ſpecies in his *Prodromus*.

1. B. *palmata*, of Ruiz and Pavon, of which he gives no character or deſcription.

2. B. *lobata*, of the ſame, "Fl. Peruv. v. 3. t. 251, B." Spreng. Sp. Umb. 13.—Somewhat hairy. Leaves lobed, ribbed; abrupt at the baſe; lobes entire, pointed. Footſtalks elongated. Flower-ſtalks axillary, moſtly ſolitary. Tendrils none.—Native of the loftieſt mountains of Peru. *Herb* ſlender, green, with ſome ſcattered ſtarry pubeſcence. *Leaves* oppoſite, an inch broad, half an inch long, five-ribbed, on ſlender zigzag *footſtalks* about a finger's length. *Stipulas* membranous, linear, in pairs. *Flower-ſtalks* about two lines long, reflexed after flowering, the *ſtipulas* ſerving as an *involucrum*. *Petals* five, cream-coloured. *Fruit* in pairs, ſolid, ribbed at the back, clothed with ſtarry hairs.

3. B. *incana*, of the ſame, "Fl. Peruv. v. 3. t. 268, A." Spreng. Spec. Umb. 13. t. 5. f. 10.—Hoary. Leaves kidney-ſhaped, lobed, notched; heart-ſhaped at the baſe. Flower-ſtalks axillary, aggregate. Tendrils axillary.—Native of Peru and Brazil. Our ſpecimen was gathered in the laſt-mentioned country, by Commerſon, and is larger than Sprengel's figure, being a foot long, though incomplete. This ſpecies ſeems nearly allied to the laſt. We diſcover no *tendrils* in our ſpecimen.

4. B. *geniculata*. Spreng. Spec. Umb. 14. t. 5. f. 11. (Peucedanum geniculatum; Forſt. Prodr. 22. Willd. Sp. Pl. v. 1. 1408.)—Smooth. Leaves nearly orbicular, crenate; wedge-ſhaped and entire at the baſe. Umbels terminal, many-flowered.—Native of New Zealand. *Stem* proſtrate, branched. *Leaves* not half an inch broad. *Umbels* compound. *Fruit* unknown. This ſeems to us a very doubtful *Bowleſia*, and is referred hither merely on account of ſome reſemblance of habit.

BOWLING-*Green*, in *Geography*. Add—Alſo, a townſhip of Ohio, in the county of Licking, having 379 inhabitants.

BOXBOROUGH, l. 2, for 412 *r.* 388.

BOXFORD, l. *ult.*, for 925 *r.* 880.

BOYLSTON, l. *ult.*, for 839 *r.* 802.

Boylston, *Weſt*, a town of the ſame ſtate and county, having 632 inhabitants.

BOZRAH. Add—It contains 960 inhabitants.

BRACCIO, plur. Bracci, a meaſure for cloth in Italy.

BRACHIONUS. Add—See Vermes and Wheel-*Animals*.

BRACHYSEMA, in *Botany*, ſo named by Mr. Brown, from βραχυς, *ſhort*, and σημα, *a ſtandard*, alluding to a ſtriking part of the generic character.—Brown in Ait. Hort. Kew. v. 3. 10.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx nearly equally five-cleft; with a ſwelling tube. Corolla papilionaceous; ſtandard ſhorter than the compreſſed keel, which is equal to the wings. Stalk of the germen minutely ſheathed. Style thread-ſhaped, elongated. Legume tumid, with many ſeeds.

1. B. *latifolium*. Broad-leaved Brachyſema. Ait. n. 1. Curt. Mag. t. 2008.—"Leaves ovate, flat. Standard oblong-obovate."—Sent by Mr. Good, in 1803, from the ſouth-weſt coaſt of New Holland, where it was alſo gathered by Mr. Brown. A hardy green-houſe procumbent or pendulous *ſhrub*, eaſily propagated by cuttings, and flowering in the ſpring. *Flowers* ſcarlet, very handſome, axillary, nearly ſeſſile, ſolitary, ſometimes two or three together, their ſmall acute *ſtandard* yellow at the baſe; *wings* and *keel* full an inch long.

There appear to be other ſpecies, not yet introduced into the gardens.

BRACKEN, in *Geography*, a county of Kentucky, having 3451 inhabitants, of whom 295 are ſlaves.

BRADFORD, col. 2, l. 11, *r.* In 1811, the houſes in the hundred of Bradford were 1766, and the number of perſons was 9435; 4269 being males, and 5166 females. The pariſh of Great Bradford contained 548 houſes, and 2989 perſons.

Bradford, in Yorkſhire, l. 12. The pariſh of Bradford contains 13 townſhips, and in 1811 the townſhip of Eaſt and Weſt Bradford contained 1574 houſes, and 7767 perſons: Eaſt Bradford having 725 houſes, and 3559 perſons; 1663 being males, and 1896 females: and Weſt Bradford having 849 houſes, and 4208 perſons; 1986 being males, and 2222 being females.

Bradford, *Eaſt and Weſt*. Add—the former contained, in 1810, 1003, and the latter 1219 inhabitants.

Bradford, l. 4, *r.* 1369; l. 9, *r.* 1034; l. 12, *r.* 1302.

BRADYPUS, l. 16, for floth *r.* bear; l. 20, after megatherium, add—(which fee).

BRAIN, *Chemical Analyfis of.* For ADIPOCIÆ *r.* ADIPOCIRE.

A new and elaborate analyfis of the brain has been lately made by Vauquelin; but it muft be confeffed that his refults throw no light whatever upon the manner in which its conftituents are combined, or to what its peculiar appearance is owing. The following are the refults: 100 parts contain,

Water - - -	80.
White fatty matter -	4.53
Reddifh fatty matter -	.70
Albumen - - -	7.
Ofmazome - -	1.12
Phofphorus - -	1.50
Acids, falts, and fulphur	5.15
	100

BRAINTREE, in *Geography.* In 1811, the parifh of Braintree contained 508 houfes, and 2298 perfons; 1082 being males, and 1216 females. The parifh of Bocking contained 537 houfes, and 2544 perfons; 1134 being males, and 1410 females.

BRAINTREE, in America, l. 4, *r.* 850; l. 12, The inhabitants, in 1810, were 1351.

BRAMPTON, l. 20, *r.* In 1811, the number of houfes was ftated to be 265, and of inhabitants 2043; 920 being males, and 1123 females: 52 families being employed in agriculture, and 394 in trade and manufactures.

BRANDON, l. *ult. r.* In 1811, Brandon parifh contained 206 houfes, and 1360 perfons; 646 being males, and 714 females.

BRANDON, in America, l. 2, *r.* 1375.

BRANDYWINE. Add—containing 1257 inhabitants.—Alfo, a hundred in the diftrict of Delaware, and county of New-Caftle, containing 2257 inhabitants.

BRANFORD. Add—It contains 1932 inhabitants.

BRANTRIM, a townfhip of Luzerne county, in Pennfylvania, containing 904 inhabitants.

BRASAVOLA, in *Botany*, has received its name from Mr. Brown, in memory of Antonius Mufa Brafavolus, or Brafavolo, an Italian phyfician and botanift, born at Ferrara in 1500. Haller, who inaccurately fpells his name *Braffavolus*, fpeaks of him as not unlearned in books or languages, or in the plants of his own country. His works, which have been often republifhed, relate chiefly to the *Materia Medica.* Their author vifited France in 1528, and died in 1555.—Brown in Ait. Hort. Kew. v. 5. 216.—Clafs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eff. Ch. Calyx and petals diftinct, fpreading. Lip undivided, with a fimple claw. Anther a terminal lid. Maffes of pollen eight or more.

We do not feel competent to form an opinion of this genus, having no knowledge but of one fpecies. Mr. Brown, who has more in contemplation, confiders the maffes of pollen being fometimes more than eight a very remarkable character.

1. B. *cucullata.* Single-flowered Brafavola. Ait. n. 1. (Cymbidium cucullatum; Swartz in Act. Nov. Upf. v. 6. 73. Willd. Sp. Pl. v. 4. 100. Epidendrum cucullatum; Linn. Sp. Pl. 1350. Curt. Mag. t. 543. Helleborine floribus albis cucullatis; Plum. Ic. 173. t. 179. f. 1.)—Stem nearly fingle-flowered. Lip fringed.—Native of the Weft Indies. Brought to Kew by admiral Bligh, in 1793. It flowers in the ftove, from June to September. The *ftem* is fimple, about a fpan high, fheathed with a few fcales, and crowned with one, rarely two, long, very narrow, keeled, flefhy *leaves*, and as many large, white, long-ftalked, nearly fcentlefs, but very elegant, *flowers;* their drooping *calyx* and *petals*, two or three inches long, furrounding the long, pointed, curioufly fringed *lip.*

BRASSIA, thus named by Mr. Brown, in due commemoration of the late Mr. Brafs, a fkilful botanical traveller and draughtfman, who collected feeds, plants, and dried fpecimens, on the Guinea coaft, for fir J. Banks, Dr. Fothergill, and Dr. Pitcairn, and whofe fketches, being moft liberally lent by fir Jofeph Banks to Dr. Afzelius, in his vifit to Sierra Leone, were malicioufly damaged, and partly deftroyed, out of characteriftic and wanton brutality, by fome piratical flave-mongers, under the French flag, during the late war, who ftruck the firft blow towards the ruin of the colony. (See SIERRA LEONE.)—Brown in Ait. Hort. Kew. v. 5. 215.—Clafs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eff. Ch. Calyx and petals fpreading, diftinct. Lip dilated, undivided, nearly flat. Column fimple. Anther a moveable lid. Maffes of pollen two; divided behind; attached by their middle to a common procefs of the ftigma.

1. B. *maculata.* Spotted-flowered Braffia.—Native of the Weft Indies. Imported by fir Jofeph Banks in 1806. A large and very handfome plant, with broad fheathing coriaceous *leaves*, and a clufter of large *flowers*, whofe *calyx* and *petals* are green, the broad *lip* white; all beautifully and varioufly fpotted with purple.

BRATTLEBOROUGH, l. 3, *r.* 1891.

BREAD *of Bees.* See PAIN *des Abeilles.*

BREAD *of Wood.* See WOOD.

BREAST, *Inflammation of*, in *Surgery.* The diagnofis of this diforder is fufficiently obvious, from the prefence of fuch fymptoms as are characteriftic of inflammation in general, and which are detailed in our account of this fubject in a former volume. Inflammation may be confined to the fkin and cellular fubftance of the breaft; or it may affect more particularly the glandular part of this organ. According to ufually-received opinions, either of thefe cafes may originate from a fuppreffion or obftruction of the fecretion of milk, rough handling of the breaft, external violence, ftoppage of the menfes, impediment to the difcharge of the lochia, &c. When the inflammation is moderate, it generally terminates in refolution; but when more fevere, or improperly treated, an abfcefs is the confequence. Though confiderable indurations are often produced in the breaft by attacks of common inflammation, it is but in a limited proportion of cafes that fuch hardnefs partakes of the true fcirrhous or cancerous nature.

The treatment of inflammation of the breaft is to be regulated in a great meafure by the kind of caufe that has given origin to the complaint; a fubject which cannot be duly underftood without adverting to what has been faid in the various medical and furgical articles of this work on the different fpecies of inflammation. Inflammation of the breaft is moft frequent in women within the firft three months after delivery; and the beft means of preventing the diforder confifts in having the milk drawn or fucked out of the nipple fome weeks previoufly to delivery. But when the inflammation already exifts, or threatens to begin, the fame plan of drawing or fucking the breaft fhould be purfued; and, together with general antiphlogiftic remedies, the furgeon may have recourfe to emollient applications, leeches, fomentations, and when the acute ftage of the inflammation is over, to gentle friction with liniments, or to the employment

ment of resolvent plasters. Abscesses are to be treated on the principles explained in the article Suppuration.

BRECHIN, in *Geography*. In 1811, the burgh and parish of Brechin contained 769 houses, and 5559 persons; 2514 being males, and 3045 females.

BRECKENRIDGE, a county of Kentucky, containing 3430 inhabitants, of whom 505 are slaves.

BRECKNOCK, l. 1, for Lancaster *r*. Berks; and add—containing 723 inhabitants.

Brecknock, col. 3, l. 4, after parishes, add—and in 1811 contained 718 houses, and 3196 inhabitants; 1433 being males, and 1763 females: 205 families employed in agriculture, and 375 in trade, manufactures, and handicraft.

BRECKNOCKSHIRE, l. 17, *r*. These, with the hamlets, were peopled in 1811 by 37,735 persons, and contained 7555 houses; 4667 families being employed in agriculture, and 2239 in trade and manufactures.—L. 35. The other rivers are, the Irvon, which falls into the Wye above the town of Builth; the Tawe, which discharges its waters into the Bristol Channel at Swansea; the Taaf; the Llysni, which passes through Langorse Mere or Llynsavaddan, and runs into the Wye at Glasbury; the Melltie or Isilté, remarkable for its subterraneous passage in one part of its course; the Hapste, celebrated for its beautiful cascade; and the Honddy at Brecknock. The principal lake in this county is *Llynsavaddan*; which see.—L. 41. The iron-works of this county are objects of great importance, in connection with its commerce and prosperity. The first of these is at Llangrwyne, in the parish of Llangenau, now forming an appendage to the works at Sirhowy in Monmouthshire: the next works are those in the vale of Clydach, in the parish of Llanelly: there is another in the parish of Llangattock; others are situated near the source of the Rumney river, on the borders of Glamorganshire; and those of Hirwaun, in the parish of Pendergn, at the southern extremity of the county.

BRENTA, in *Commerce*, a liquid measure in some parts of Italy, as at Bergamo.

BRENTFORD. Add—Old Brentford forms a part of Ealing parish, which in 1811 contained 922 houses, and 5361 inhabitants; 2509 being males, and 2852 females. New Brentford is a distinct parish, and contained 297 houses, and 1733 inhabitants; 809 being males, and 924 females.

BRENTWOOD. In 1811, Brentwood contained 218 houses, and 1238 persons; 575 being males, and 663 females.

Brentwood, in America, l. 2, *r*. 905.

BRETON, Cape, l. 6, for 34 *r*. 84.

BREWER. Add—By 43 Geo. III. c. 69. every common brewer of strong beer shall take out a licence, for which he shall pay according to the quantity of beer brewed by him within the year, as specified in the act, ending 5th July every year: but every person who shall first become a brewer of strong beer, for every such licence 1*l*. 10*s*., and within ten days after the 5th of July, after taking out such licence, such further additional sum as with the said 1*l*. 10*s*. shall amount to the duty hereinbefore directed to be paid, according to the number of barrels of strong beer brewed within the preceding year. If he neglect to take out such licence, and to renew it annually, ten days at least before the end of the year, he shall forfeit 50*l*. 24 Geo. III. c. 41. And every common brewer of table beer, not being a common brewer of strong beer, shall take out a licence and pay for the same yearly 1*l*., to be renewed annually. By 42 Geo. III. c. 38. no person not being a common brewer shall be allowed to retail beer at any higher price than 1½*d*. the quart without entering into a recognisance and obtaining a licence as an ale-house keeper, under pain of forfeiting for each offence 50*l*. over and above the penalty imposed upon selling beer without a licence. By 15 C. II. c. 11. notices of brewing beer or ale shall be given, and also of erecting or altering any implements for this purpose, on pain of 50*l*. By 5 Geo. III. c. 43. the position of any tun, cooler, copper, &c. shall not be altered without notice, under penalty of 20*l*. The officer of excise shall enter and examine suspected places; and if any person oppose him, he incurs a forfeiture of 20*l*. 7 & 8 W. c. 30. No common brewer shall use any pipes or other private conveyances from any copper in his brew-house, &c. on pain of 200*l*. 8 & 9 W. c. 19. 42 Geo. III. c. 38. Search shall be made by the officer, and the penalty of opposing him is 50*l*. No common brewer, innkeeper, victualler, or other retailer of beer or ale, shall keep any private storehouse or cellar for laying any beer or ale, or worts in cask, on pain of 50*l*. 15 C. II. c. 11. 1 W. st. 1. c. 24. By 42 Geo. III. c. 38. every common brewer who shall lay off any beer, ale, or worts contrary to the 8 & 9 W. III. shall for every such offence forfeit 100*l*. Persons inhabiting a market-town, city or town corporate, or parts adjoining to a city or town corporate, in which there is a common brew-house, who shall suffer liquors to be brewed in their houses, otherwise than for their own families or for purposes of charity or hospitality, and who shall lend out brewing vessels, shall forfeit 50*l*. 22 & 23 C. II. c. 5. Gaugers shall take an account, and obstructing them in the exercise of their office incurs a penalty of 10*l*. and forfeiture of double value for beer, ale, or other specified liquors that have been sold or delivered out, without payment of duty. If any brewer shall bribe the gauger to make a false return he shall forfeit 10*l*., and the officer so bribed shall forfeit the same sum; 5 C. II. c. 11. By 42 Geo. III. c. 38. the penalty on mixing liquors to imitate beer, and to be mixed with or used as beer made from malt and hops, or selling such liquors, is 200*l*. and forfeiture of liquor and utensils; and the penalty on a brewer's receiving stale beer-grounds, and mixing any liquor with beer, except malt and hops, is 100*l*. Excise officers are authorised to take samples of suspected liquors, search suspected places, and seize forbidden liquors, ingredients, and utensils; and the person in whose custody they are found shall forfeit 100*l*. No common brewer shall carry out any ale or beer to his customers in any city or market-town, before notice given to an officer of excise, but between three in the morning and nine in the evening from March 25 to September 29; and between five in the morning and seven in the evening from September 29 to March 25, on pain of 20*s*. a barrel; 15 C. II. c. 11.

And whereas it is expedient that the quantities to be returned as and for a barrel of beer or ale brewed by the common brewer and the allowances for waste should be in all places the same, it is enacted that after the 5th day of July 1803 every 36 gallons of beer or ale brewed by the common brewers in Great Britain, whether within the weekly bills of mortality or without the same, taken according to the standard of the ale quart four thereof to the gallon in the exchequer, shall be reckoned and returned by the gauger or other officer of excise for a barrel of beer or ale; and the allowances to be made in Great Britain to the common brewer not selling beer, ale, or worts in any less quantity than a whole cask containing 4½ gallons, whether within or without the said limits, for waste by fillings and leakage, or otherwise, out of the returns by the gaugers, or other officers, shall be three barrels upon every 36 barrels, both of strong beer or table beer and ale, and after that rate for any greater or less quantity; 43 Geo. III. c. 69. A common brewer who shall sell beer, ale, or worts in any less quantity than in a whole cask containing 4½ gallons, shall forfeit 50*l*. for every such fuch offence. And if any perfon, not being a common brewer, fhall retail beer at a higher price than after the rate of $1\frac{1}{2}d.$ the quart, ale-houfe meafure, without obtaining a licence as a common ale-houfe keeper, he fhall forfeit 50*l.* over and above any other penalty for felling beer or ale without fuch licence; 42 Geo. III. c. 38. Entries fhall be made by common brewers once a week, under penalty of 10*l.*; and by innkeepers once a month on pain of 5*l.*; and alfo ale-houfe keepers, victuallers, and other retailers, fhall do the fame on penalty of 20*s.* Beer and ale above 18*s. per* barrel fhall be deemed ftrong, and at 18*s.* and under, table beer; 43 Geo. III. c. 81. The 42 Geo. III. c. 38. regulates the price, &c. of table beer, and repeals as to this beer 22 Geo. III. c. 68. The penalty for felling table beer at more than the barrel price, exclufive of duty, is 100*l.*

BREWERIA, in *Botany*, fo named by Mr. Brown, in memory of Mr. Samuel Brewer, a Wiltfhire botanift, the companion of Dillenius in a botanical vifit to Wales, Anglefea, and the Ifle of Man, in 1726, and fubfequently one of his moft valuable correfpondents, efpecially for the Cryptogamic department. Mr. Brewer fpent the latter part of his life at Bradford, under the patronage of Dr. Richardfon, and, according to Dr. Pulteney, was living in 1742.—Brown Prodr. Nov. Holl. v. 1. 487.—Clafs and order, *Pentandria Monogynia.* Nat. Ord. *Campanaceæ*, Linn. *Convolvuli*, or *Convolvulaceæ*, Juff. Br.

Eff. Ch. Calyx in five deep fegments. Corolla funnel-fhaped, plaited. Style deeply divided. Stigmas capitate. Capfule of two cells, valvular, furrounded by the permanent calyx. Seeds two in each cell.

Thefe are diffufe *herbs*, not milky; their *leaves* undivided; *flowers* axillary, moftly folitary. The genus appears moft akin to *Porana*, differing in habit, and in the unaltered *calyx* of the fruit.

1. B. *linearis.* Linear Breweria. Br. n. 1.—Villous. Leaves linear-lanceolate, folded. Style equally divided nearly to the bafe.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. B. *media.* Intermediate Breweria. Br. n. 2.—Slightly villous. Leaves lanceolate; obtufe and fomewhat heart-fhaped at the bafe. Style divided half way, into two unequal fegments.—From the fame country. *Br.*

3. B. *pannofa.* Woolly Breweria. Br. n. 3.—Downy. Leaves ovate, fomewhat heart-fhaped, denfely woolly. Calyx unequal; its outer fegments ovate, fomewhat pointed. Style in two deep unequal divifions. — From the fame country. *Br.*

We know not whether there be any more fpecies in other parts of the globe.

BREWSTER, in *Geography*, a town of Barnftable county, in the Maffachufetts, containing 1812 inhabitants.

BRIBIESCA, *dele.*

BRIDELIA, in *Botany*, a genus feparated from *Cluytia* by Willdenow, and dedicated by him to the honour of the great fyftematic mufcologift, Dr. Samuel El. Bridel.—Willd. Sp. Pl. v. 4. 978. Ait. Hort. Kew. v. 5. 444.—Clafs and order, *Polygamia Monoecia*, or rather *Monadelphia Pentandria.* Nat. Ord. *Tricoccæ*, Linn.? *Euphorbiæ*, Juff.?

Eff. Ch. Calyx inferior, in five deep fegments. Petals five, inferted into the calyx. Stamens with a tubular, columnar bafe. Styles two, divided. Berry with two feeds. Some flowers want the ftamens, fome others the germen.

The fruit diftinguifhes this genus from Cluytia. (See that article.) Three fpecies only are defcribed, all Eaft Indian.

1. B. *montana.* Mountain Bridelia. Willd. n. 1. (Cluytia montana; Roxb. Corom. v. 2. 38. t. 171.)—Stem erect, without thorns. Leaves obovate-elliptical, entire, fmooth.—Native of Coromandel. On the interior mountains it grows to a tree, but on the lower lands is only found of a fmall fize. The Telingas call it *Pantinga. Roxb.* The *wood* is reddifh, very hard. *Stem* fhort and thick. *Branches* flender, fpreading. *Leaves* numerous, alternate, two-ranked, an inch and a half long, on fhort ftalks. *Flowers* fmall, crowded, axillary. *Berry* purple, globular, fucculent, the fize of a pea.

2. B. *fcandens.* Climbing Bridelia. Willd. n. 2. Ait. n. 1. (Cluytia fcandens; Roxb. Corom. v. 2. 39. t. 173.)—Stem fhrubby, climbing, without thorns. Leaves oblong-ovate, entire, acute; Downy beneath.—Common on the banks of rivers and water-courfes, on the coaft of Coromandel, flowering in November and December, and called by the Telingas *Doonkyboora. Roxb.* *Stem* climbing; its *branches* leafy, flowering at their pendulous extremities. *Leaves* three inches long; thofe which accompany fome of the flowers diminifhed almoft to *bracteas.* *Berry* oval, of a rufty black, the fize of a horfe-bean. This fpecies was fent to Kew in 1804, by colonel Hardwicke, F.L.S., fo well known by his various communications, illuftrative of the natural hiftory of India.

3. B. *fpinofa.* Thorny Bridelia. Willd. n. 3. (Cluytia fpinofa; Roxb. Corom. v. 2. 38. t. 172.)—Stem arboreous, erect, thorny. Leaves ovate, acute, entire, fmooth.—A tree of confiderable fize found on the mountains along with the firft fpecies, and called by the Telingas *Cora-maun.* The *bark* is a ftrong aftringent; *wood* hard and durable, dark-coloured; *leaves* eaten greedily by cattle, and faid to deftroy worms in their bowels. *Roxb.* The *leaves* are three or four inches long. *Flowers* in terminal, or axillary, interrupted *fpikes.* *Berry* black, the fize of a pea.

BRIDGEND, l. *ult. r.* The parifh of Newcaftle, higher and lower, contains 157 houfes, the former having 40, and the latter 117; and 640 inhabitants, the former including 171, and the latter 469. In the higher, the males are 84, and females 87; in the lower, the males are 210, and females 259.

BRIDGENORTH, col. 2, l. 9, add — In 1811 the borough of Bridgenorth contained 978 houfes, and 4386 perfons; 2006 being males, and 2380 females: 81 families employed in agriculture, and 870 in trade and manufactures.

BRIDGEPORT, a townfhip of Pennfylvania, in Fayette county, having 280 inhabitants.

BRIDGESTOWN, a town of the diftrict of Maine, in the county of Kennebeck, containing 214 inhabitants.

BRIDGE-TOWN, l. 5, *r.* 882.

BRIDGEWATER, col. 2, l. 26, add — In 1811 the borough of Bridgewater contained 857 houfes, and 4911 perfons; 2241 being males, and 2670 females: 87 families employed in agriculture, and 570 in trade and manufactures.

Bridgewater, in America, l. 3, *r.* 1104; l. 4, *r.* 2906; l. 5, *r.* 391; l. 6, *r.* 5157; l. 10, *r.* 1154. Add—Alfo, a townfhip of Luzerne county, in Pennfylvania, having 1418 inhabitants.

BRIDLINGTON, l. *ult. r.* In 1811 Bridlington contained 849 houfes, and 3741 inhabitants; 1706 being males, and 2035 females.

BRIDPORT, l. 39, add—In 1811 the borough of Bridport contained 512 houfes, and 3567 perfons; 1532 being males, and 2035 females: 20 families employed in agriculture, and 600 in trade and manufactures.

Bridport, in America, l. 3, *r.* 1520.

BRIGHTHELMSTON, l. *ult. r.* In 1811 Brighton contained 2077 houfes, and 12,012 perfons; 5069 being males, and 6043 females.

BRIGHTON, a town of Massachusetts, in Middlesex county, having 608 inhabitants.

BRIMFIELD, l. 3, *r.* 1325.

BRISTOL. Add—In 1811, this city, with Barton Regis hundred, contained 11,940 houses, and 76,433 persons; 32,842 being males, and 43,591 females.

Bristol, in America, l. 2, *r.* 2753; l. 8, *r.* 37,168; l. 13, *r.* 5072; l. 23, *r.* 2693; l. 29, add—It contains 1428 inhabitants; l. 33, after houses, add—The number of inhabitants, by the census of 1810, was 628; l. 36, after county—having 965 inhabitants; l. 39, *r.* 1179, add—Also, a township of Pennsylvania, in Berks county, having 1608 inhabitants.—Also, a township of Ohio, in the county of Trumbull, having 202 inhabitants.

BRITAIN, Little, a township of Pennsylvania, in Lancaster county, containing 1708 inhabitants.

Britain, *London*, a township of Luzerne county, having 404 inhabitants.

BROAD Creek, a hundred of Delaware, in the county of Sussex, having 3789 inhabitants.

BROCKLESBY, l. 10, after Ballytore, add—(which see,) and *dele* the remaining part of the sentence.

BRODIÆA, in *Botany*, so named by the writer of the present article, after James Brodie, esq. F.L.S., of Brodie in North Britain, an experienced and liberal British botanist, whose name often occurs in the *English Botany*, and to whom a genus of the patrician order is with great propriety inscribed.—Sm. Tr. of Linn. Soc. v. 10. 1. Pursh 223. (Hookera; Salis. Parad. 98.)—Class and order, *Triandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narcissi*, Juss.

Gen. Ch. *Cal.* none, unless the bracteas be so called. *Cor.* of one petal, bell-shaped, cut half way down into six nearly equal, oblong, rather spreading segments; throat crowned with three erect scales, shorter than the limb, opposite to three alternate segments. *Stam.* Filaments three, inserted into the tube between the scales, and opposite to the other three segments, awl-shaped, erect; anthers vertical, linear, shorter than the scales, cloven at each end. *Pist.* Germen superior, elliptic-oblong, triangular; style cylindrical, nearly the length of the stamens; stigma triangular, three-lobed. *Peric.* Capsule of three cells and three valves, with central partitions. *Seeds* numerous, elliptic-oblong, inserted into the inner margin of each partition in two rows.

Eff. Ch. Corolla inferior, tubular; limb regular, in six deep segments; throat crowned with three scales, alternate with the stamens. Capsule of three cells, with numerous seeds.

1. B. *grandiflora*. Large-flowered Brodiæa, or Missouri Hyacinth. Sm. n. 1. Pursh n. 1. (Hookera coronaria; Salis. Parad. t. 98.)—Scales of the corolla undivided. Partial stalks longer than the flowers.—Discovered by Mr. Menzies in 1792, in New Georgia, on the west coast of North America. Governor Lewis is recorded to have gathered this plant on the plains of the Columbia and Missouri rivers, flowering in April and May. It is reported to have bloomed in Mr. Salisbury's garden, but is not admitted into Hort. Kew. or the Addenda to that work. The *root* is bulbous, solid. *Leaves* two, radical, linear, channelled, near a foot long. *Flower-stalk* solitary, bearing an unequal, bracteated *umbel*, of upright, handsome, blue *flowers*, each near an inch long, with yellowish *scales*, and yellow *anthers*.

2. B. *congesta*. Crowded Brodiæa. Sm. n. 2. t. 1.—Scales of the corolla cloven. Partial stalks much shorter than the flowers.—Brought by Mr. Menzies, with a coloured drawing, from New Georgia. The *flowers* are rather numerous, smaller than the foregoing, and form a dense head, subtended by pointed *bracteas*.

BROKENSTRAW, a township of Warren county, in Pennsylvania, having 379 inhabitants.

BROMELIÆ, in *Botany*, the 15th order in Jussieu's system, the 5th of his third class. See Junci.

The *Bromeliæ* are thus defined. *Calyx* (*Corolla* of Linnæus) in six, more or less deep, segments, either superior or inferior, equal, or mostly unequal, the three alternate divisions being largest. *Stam.* six, inserted into the bottom or middle of that part, or sometimes into calycine glands, lying over the germen. *Germen* simple, superior or inferior; style one; stigma three-cleft. *Fruit* of three cells, either pulpy and not bursting, or capsular and of three valves; each cell containing one or many *seeds*. The *leaves* are sheathing, all for the most part radical. *Flowers* spiked, panicled, or more rarely corymbose, each accompanied by a *spatha*.

Sect. 1. *Germen superior.*

Burmannia and *Tillandsia*, with *Puya* of Molina, Juss. append. 447.

Sect. 2. *Germen inferior.*

Xerophyta, *Bromelia*, and *Agave*.

BROMSGROVE, in *Geography*. In 1811, the parish of Bromsgrove contained 1378 houses, and 6932 persons; 3349 being males, and 3583 females: 357 families employed in agriculture, and 1085 in trade and manufactures.

BRONZITE. See Mineralogy, *Addenda*.

BROOK, *Honey*, in *Geography*, a township of Pennsylvania, in Chester county, with 1073 inhabitants.

BROOKE, a county of Virginia, containing 5843 inhabitants, including 332 slaves.

BROOKFIELD, l. 4, *r.* 3170; l. 11, for 421 *r.* 1384; l. *ult.*, add—containing 1037 inhabitants.

BROOKLIME, a town of New Hampshire, in Hillsborough county, having 538 inhabitants.—Also, a town of Vermont, in Windham county, having 431 inhabitants.—Also, a town in Strafford county, in New Hampshire, with 657 inhabitants.—Also, a township of Ohio, in the county of Trumbull, having 345 inhabitants.

BROOKLYN, l. 2, 704 inhabitants; l. *ult.* containing 1200 inhabitants.

BROOME, a county of New York, including 8130 inhabitants.

BROSELEY. In 1811 this parish contained 1025 houses, and 4850 persons; 2448 being males, and 2402 females: 48 families employed in agriculture, and 856 in trade and manufactures.

BROTERA, in *Botany*, a name applied to two very different plants, in due commemoration of the Rev. Father Felix Avellar Brotero, professor of botany at Coimbra in Portugal, author of the *Flora Lusitanica*, and several other learned works. The *Brotera* of the late professor Willdenow, Sp. Pl. v. 3. 2399, *Carthamus corymbosus* of Linnæus, appears to us founded on a total misconception of the structure of the flower, in which we can find no character whatever different from *Carthamus*. This genus is, however, adopted in Ait. Hort. Kew. v. 5. 186, according to the general plan of that work, where the editors had no particular object of reformation or illustration in view. The other *Brotera* is published by professor Sprengel, in Tr. of Linn. Soc. v. 6. 151. Its only species is *B. persica*, brought by Olivier and Bruguiere from Persia. We regret to observe that this is manifestly a Hyptis (see that article); and we lament that it was, from full confidence in its learned and distinguished author, too incautiously admitted into the Linnæan Transactions, for which

which the writer of this acknowledges himſelf entitled to a ſhare of the blame.

BROTHERS' VALLEY, in *Geography*, a townſhip of Pennſylvania, in Somerſet county, having 1314 inhabitants.

BROUGH. In 1811 this townſhip contained 131 houſes, and 758 perſons; 369 being males, and 389 females.

BROUGHTONIA, in *Botany*, ſo called by Mr. Brown, in memory of the late Mr. Arthur Broughton, of Briſtol, author of an "*Enchiridion*," or ſyſtematic manual, of Britiſh plants, publiſhed in 1782; and, after his removal to Jamaica, of the *Hortus Eaſtenſis*, and of a Catalogue of the Botanic garden in the mountains of Liguanea.—Brown in Ait. Hort. Kew. v. 5. 217.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals ſpreading. Column unconnected, or attached at the baſe only to the ſtalked lip. Anther a moveable lid. Maſſes of pollen four, parallel, divided by complete permanent partitions, and extending at the baſe into an elaſtic granulated thread.

Obſ. In ſome inſtances the baſe of the lip is elongated into a little tube, attached to the germen.

1. B. *ſanguinea*. Blood-red Broughtonia. Ait. n. 1. (Dendrobium ſanguineum; Swartz Nov. Act. Upſ. v. 6. 82. Ind. Occ. 1529. Willd. Sp. Pl. v. 4. 132. Viſcum radice bulboſâ minus, delphinii flore rubro ſpecioſo; Sloane Jam. v. 1. 250. t. 121. f. 2.)—Leaves oblong, in pairs from the top of a bulb. Flower-ſtalk divided.—This grows on trees and paliſades in the woods of Jamaica, forming tufts of leaf-bearing *bulbs*, the *leaves* light green, two inches long. *Stalks* radical, a foot high, with a few handſome, corymboſe, dark crimſon *flowers*.

This is the only ſpecies yet known in our ſtoves, nor have we an account of any other.

BROUSSONETIA, in *Botany*, (ſee PAPYRIUS,) where the hiſtory and deſcription of this curious tree are given.

BROWN SPAR, or *Bitter Spar*. See MINERALOGY, *Addenda*.

BROWNFIELD, l. 2, for York *r.* Oxford; l. 3, *r.* 398.

BROWNINGTON, a town of Vermont, in Orleans county, having 236 inhabitants.

BROWNSVILLE. Add—It contains 698 inhabitants.

BRUCHUS, l. 8, *dele* which ſee reſpectively, and inſert—the inſects of this genus are, in general, of a ſmall kind. The B. *granarius* is found among leaves, vetches, and other ſeeds, the lobes of which it devours. It is about two lines long, of a black colour, and its wing-ſhells are freckled with white ſpecks; the two fore-legs are reddiſh, and the thighs of the hind-legs armed with a tooth and forceps. The B. *ſeminarius* is rather ſmaller than the preceding, but like it, without the denticle of the hinder thighs. The exotic ſpecies are chiefly natives of America.

BRUNNERSTOWN, in *Geography*, a town of Kentucky, in Jefferſon county, with 92 inhabitants, of whom four are ſlaves.

BRUNONIA, in *Botany*, ſo named by the writer of this, after his highly-valued friend Mr. Robert Brown, F.R.S. librarian to the Linnæan ſociety, no leſs eminent for acuteneſs of obſervation, than for deep botanical ſcience, whoſe diſcoveries in New Holland have ſo often been brought before our readers, and who met with this new and ſingular genus in that country. The memory of Dr. Patrick Browne, the natural-hiſtorian of Jamaica, being already preſerved in the BROWNÆA, (ſee that article,) it has been found neceſſary to adopt the above conſtruction, authoriſed by precedent, to avoid ambiguity.—Sm. Tr. of Linn. Soc. v. 10. 365. Brown Prodr. Nov. Holl. v. 1. 589.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Aggregatæ*, or perhaps *Campanaceæ*, Linn. *Dipſaceæ*, Juſſ.? *Goodenoviæ*? Brown.

Gen. Ch. *Cal.* Perianth double, both inferior; outer of four membranous, nearly equal, erect, concave, obtuſe leaves; inner of one leaf, rather the longeſt, turbinate, permanent, with five feathery teeth. *Cor.* of one petal, funnel-ſhaped, longer than the calyx; limb in five deep, ſpreading, nearly equal ſegments, the two upper ones moſt deeply divided; tube ſeparable into five narrow claws. *Stam.* Filaments five, capillary, weak, inſerted into the receptacle; anthers linear, united into a cylinder, the length of the tube of the corolla. *Piſt.* Germen ſuperior, roundiſh; ſtyle club-ſhaped, about twice the length of the ſtamens; ſtigma turbinate, obtuſe, concealed by two vertical, equal, orbicular, concave, membranous, converging valves. *Peric.* none, except the inner perianth, lined with the membranous baſe of the corolla, both together enlarged and hardened, and crowned with the five feathery teeth elongated and divaricated, ſo as to form a ſeed-crown. *Seed* ſolitary, covered, ovate, deſtitute of albumen, with an erect embryo.

Eſſ. Ch. Corolla funnel-ſhaped, five-cleft, irregular. Anthers combined. Stigma with a bivalve ſheath. Seed one, clothed with the feathery-crowned inner calyx.

The generic diſtinctions of *Brunonia* are abundantly eaſy; but to determine its natural order, or affinities, is very difficult, the latter being ſo many, and ſo remote from each other, that the plant reſembles Horace's imaginary feathered monſter, with a horſe's neck and human head. Mr. Brown, in the lateſt view he has taken of the ſubject, in a moſt invaluable paper on the natural order of *Compoſitæ*, Tr. of Linn. Soc. v. 12. 132, has pointed out *Brunonia* as a connecting link between that family and the *Goodenoviæ*; nor are various other links between theſe very different tribes wanting. With great candour he nevertheleſs admits whatever favours our idea of its relationſhip to *Dipſaceæ* and *Globulariæ*, and moreover adverts to circumſtances approaching it to the *Stylideæ*, near allies of *Goodenoviæ*. Two ſpecies only have been detected.

1. B. *auſtralis*. Auſtralian Brunonia. Sm. as above, 367. t. 28. Br. n. 2.—Leaves clothed with ſpreading hairs. Segments of the calyx feathery all over.—Native of the ſandy coaſts of the ſouth part of New Holland. Abundant in Van Diemen's iſland, and obſerved alſo on the oppoſite ſhore of New Holland, at Port Phillip, flowering in January 1804. *Mr. Brown. Herb* apparently annual, without a ſtem, hairy all over, much reſembling in habit, colour, and pubeſcence, the Linnæan *Scabioſa cretica*. *Root* ſimple, ſlender. *Leaves* radical, numerous, ſpathulate, pointed, ſingle-ribbed, entire, tapering at the baſe, two or three inches long, very hairy. *Flower-ſtalks* radical, ſolitary, ſimple, hairy, eſpecially the lower part, a foot high, each bearing a head of numerous blue *flowers*, not unlike the Sheep's Scabious, *Jaſione montana*, but rather larger, and looſely hairy. The *head* is ſubtended by numerous, nearly equal, ſpreading, permanent, hairy *bracteas*, ſhorter than the flowers; the inner ones ſmalleſt, ſolitary under each flower.

2. B. *ſericea*. Silky Brunonia. Sm. as above, 367. t. 29. Br. n. 1.—Leaves ſilky with cloſe-preſſed hairs. Segments of the calyx with naked coloured tips.—Gathered by Mr. Brown, on the ſandy ſea-ſhore at Pine Port, on the eaſt coaſt of New Holland, juſt within the tropic, flowering in Auguſt 1802. The aſpect and pubeſcence of this ſpecies

ſpecies exactly anſwer to *Scabioſa graminifolia*. It differs from the foregoing in having narrower, more numerous, ſilky *leaves*, and the *flowers* differ remarkably in the blunt, coloured, naked points of their inner *calyx*.

BRUNSVIGIA, ſo named in 1753, by Heiſter, in compliment to his patron Charles duke of Brunſwick Lunenburg. What were his ſerene highneſs's claims to this honour, we know not, nor is HEISTER any authority in ſuch a caſe (ſee his biographical article); but we hope all Engliſhmen will ever have reaſon to hail the name of Brunſwick, wherever it appears, and the genus in queſtion, long confounded with *Amaryllis*, being now reſtored, the name of *Brunſvigia* appears with peculiar propriety in the royal garden of England.—Heiſt. Brunſv. 2. Ait. Hort. Kew. v. 2. 230. Ker in Curt. Mag. under p. 923*.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narciſſi*, Juſſ.

Gen. Ch. *Cal.* an oblong, obtuſe, compreſſed, leafy ſheath, of two valves, withering. *Cor.* ſuperior, in ſix deep, lanceolate, recurved, nearly equal ſegments. *Stam.* Filaments ſix, awl-ſhaped, about the length of the corolla; anthers oblong, incumbent. *Piſt.* Germen inferior, obovate, with three furrows and as many rounded angles; ſtyle thread-ſhaped, the length and poſition of the ſtamens; ſtigma bluntiſh. *Peric.* Capſule turbinate, abrupt, with three rounded wings, membranous, ſomewhat tranſparent, of three cells and three valves. *Seeds* ſeveral, ovate, acute; curved and compreſſed at the point.

Eſſ. Ch. Corolla ſuperior, in ſix deep ſegments. Capſule turbinate, membranous, with three wings. Seeds ſeveral, pointed.

1. B. *multiflora*. Broad-leaved Brunſvigia. Ait. n. 1. (Brunſvigia; Heiſt. as above, t. 1—3. Amaryllis orientalis; Linn. Sp. Pl. 422. Willd. Sp. Pl. v. 2. 58. Jacq. Hort. Schoenbr. v. 1. 38. t. 74. Narciſſus indicus ſphæricus; Moriſ. ſect. 4. t. 10. f. 35. N. indicus, flore liliaceo, ſphæricus; Ferrar. Fl. 125. t. 129. 131. 133.)—Leaves tongue-ſhaped, depreſſed, ſmooth. Flowers ſomewhat irregular, with aſcending ſtamens and ſtyle.—Native of the Cape of Good Hope. The *bulb* is not uncommon in our ſtoves, but we never heard of its flowering. That deſirable event however happened in the imperial garden at Schoenbrun, and has enabled the late profeſſor Jacquin to adorn his Hort. Schoenbr. with one of the moſt ſplendid botanical figures extant. This is perhaps the moſt ſtately of its ſtately tribe. The large ſcaly *bulb* bears five or ſix obovate-oblong, dark green *leaves*, lying over each other in two ranks, and uſually a foot long, near three inches broad. *Flower-ſtalk* earlier than the leaves, erect, round, a foot high, crowned with a broad *ſheath*, of two coloured valves, unequal in breadth, accompanying a very large *umbel*, of about thirty-five rays, ſpreading in all directions, each ſix inches long, bearing a ſolitary erect *flower*. All the ſtalks are more or leſs of a blood red. *Corolla* richly varied with crimſon and a kind of orange ſcarlet; its ſegments an inch and a half long, acute, converging into a tubular form at the baſe, ſpreading in the upper part, and reflexed. *Capſule* two to four inches long, and one broad, pale brown, ſhining; tapering very much at the baſe.

2. B. *marginata*. Red-edged Brunſvigia. Ait. n. 2. (Amaryllis marginata; Jacq. Hort. Schoenbr. v. 1. 34. t. 65. Willd. Sp. Pl. v. 2. 59.)—Leaves tongue-ſhaped, depreſſed, ſmooth, with cartilaginous edges. Flowers regular, with erect ſtamens and ſtyle.—Native of the Cape, from whence Mr. Maſſon ſent bulbs in 1795. *Leaves* rather narrower than the former, with a hard red border. *Umbel* erect, denſe, of many ſcarlet *flowers*, with upright *ſtamens* and *ſtyle*, riſing high above the reflexed *corolla*. *Anthers* purple.

3. B. *Radula*. Raſp-leaved Brunſvigia. Ait. n. 3. (Amaryllis Radula; Jacq. Hort. Schoenbr. v. 1. 35. t. 68. Willd. Sp. Pl. v. 2. 61.)—Leaves elliptical, depreſſed, rough with briſtly tubercles. Flowers ringent, with declining ſtamens and ſtyle.—From the ſame country, introduced by Mr. Maſſon, in 1790. *Leaves* two, ſcarcely more, three inches long, rough-edged, covered on the upper ſide with briſtle-pointed warts. *Stalks* three or four inches high, ſometimes in pairs. *Umbels* of only four or five pink and white *flowers*, five of whoſe ſegments are directed upwards, the fifth deflexed, along with the *ſtamens* and *ſtyle*.

4. B. *ſtriata*. Striated Brunſvigia. Ait. n. 4. (Amaryllis ſtriata; Jacq. Hort. Schoenbr. v. 1. 36. t. 70. Willd. Sp. Pl. v. 2. 61.)—Leaves elliptic-obovate, erect; denſely ſtriated beneath. Flowers nearly regular, with declining ſtamens and ſtyle.—From the ſame country as all the reſt, introduced by Mr. Maſſon in 1795. Larger than the laſt, and diſtinguiſhed by its upright red-edged *leaves*. *Umbel* of many *flowers*, whoſe outſide is roſe-coloured, inner paler, or whitiſh, the ſegments narrow, nearly or quite regular.

BRUNSWICK, in Virginia, l. 3, *r.* 15,411 inhabitants, including 9368 ſlaves; l. 5, *r.* 4378; l. 6, *r.* 2254; l. 19, add—containing 143 inhabitants.

BRUNSWICK, *North*, contains 3980 inhabitants.

BRUNSWICK, *South*, contains 2332 inhabitants.

BRUNSWICK, in Maine, l. 5, *r.* 2682.

BRUNSWICK, a townſhip in Berks county, in Pennſylvania, having 1770 inhabitants.

BRUSH CREEK, a townſhip of Ohio, in the county of Highland, containing 551 inhabitants.

BRUSSELS, *Roger of*, *r.* BRUGES, *Roger of*.

BRUTON, col. 2, l. 2, *r.* In 1811, the pariſh of Bruton contained 353 houſes, and 1536 perſons; 658 being males, and 878 females.

BRUTUS, l. 5, *r.* Cayuga. Subjoin—This is an excellent townſhip of Cayuga county, about 10 miles long, N. and S., by 5 to $6\frac{1}{2}$ E. and W. The ſoil is rich and fertile, and well watered: it contains about 330 families, and 182 ſenatorial electors. It was erected in 1802, from the N.E. part of Aurelius. In 1810 the population was 2030, and the taxable property amounted to 84,514 dollars.

BRYAN, l. 3, add—containing 2827 inhabitants, of whom 2264 are ſlaves.

BUBALIS. See ANTELOPE.

BUBASTUS, *dele* ſee DIDYMA.

BUCCO, col. 2, l. 1, after cinereus, *dele* which ſee, and add—Theſe are all inhabitants of Africa, and the warmer parts of Aſia and America. Their head is very long, their bills ſtrong and nearly ſtraight, almoſt covered with briſtles; tail-feathers generally ten. They are a ſolitary ſtupid race, living in ſequeſtered foreſts, and ſubſiſting principally on inſects.

BUCEROS. Add—Several other ſpecies are mentioned by Dr. Shaw.

BUCHANAN, l. 7, inſert—in 1520. Col. 3, l. 9, inſert—in 1532; l. 10, *r.* Caſſilis; l. 15, *r.* 1533; l. 18—this happened probably in the year 1537; l. 43, after ſaid—(but without ſufficient evidence); l. *ult.* but one, inſert after admired—The next in merit is the 137th, in elegiac verſe. Col. 3, l. 19, after country, inſert—In 1562, he officiated as claſſical tutor to the queen, who was then in the 20th year of her age, and who many afternoons peruſed with him a portion of Livy. About the year 1566, &c.: l. 30, after York, inſert—in 1568; l. 35, after VI., inſert

—in

—in 1570, when the young prince was only four years of age; l. 43, after reading, insert—when the countess of Mar, hearing him wailing, hurried and took him up in her arms, reproaching the tutor for having laid his hand upon the Lord's anointed. Buchanan is said to have replied in terms that contained a very unceremonious antithesis relative to the part which had received the chastisement. Col. 4, l. 9, after motives, insert—and it likewise evinces his anxiety for forming a patriot king; l. 15, for 5th of December *r.* 28th of September; l. 23, after Edinburgh—in the cemetery of the Grey Friars. Col. 5, l. 10, after unequal, add—although he maintains the unscientific notion that the earth does not revolve round the sun, he supports his opinion by arguments which must at least be allowed to be plausible; l. 9, from the bottom, after great man, insert—neglected by his ungrateful country, which never afforded his grave the common tribute of a monumental stone. Subjoin—See Irving's Life of Buchanan.

BUCKENHAM. In 1811, the parish of New Buckenham contained 127 houses, and 656 inhabitants; 315 being males, and 341 females. The parish of Old Buckenham contained 200 houses, and 1024 persons; 491 being males, and 533 females.

BUCKINGHAM. In 1811, the borough of Buckingham contained 572 houses, and 2987 persons; 1313 being males, and 1674 females: 232 families employed in agriculture, and 466 in trade and manufactures.

BUCKINGHAM, a county of America, l. 3 and 4, for 1790 *r.* 1810; for 9779 *r.* 20,059; for 4168 *r.* 11,675.—Also, a township of Bucks county, in Pennsylvania, having 1715 inhabitants.—Also, a township in Wayne county, in the same state, having 153 inhabitants.

BUCKINGHAMSHIRE, l. 19 and 20, *r.* In 1811, this county contained 21,929 houses, and 117,650 persons; 13,933 families employed in agriculture, and 8424 in trade and manufactures.

BUCKLAND, l. 2, for 718 *r.* 1097.

BUCKS, l. 5, for 25,401 *r.* 32,371; for 114 *r.* 11; l. 7, for 27 *r.* 29.

BUCKSTOWN, a township of Ross county, in the district of Ohio, containing 781 inhabitants.

BUCKSTOWN, l. 3, for 316 *r.* 4403.

BUENA, in *Botany*, Cavan. Ic. v. 6. 49. t. 571, is a genus of the natural order of *Rubiaceæ*, so named by that author, in honour of Dr. Cosmo Bueno, an eminent writer on the natural history and topography of Peru. There is no certain proof of this genus being distinct from what Ruiz and Pavon had already called *Gonzalagunia*. We are equally unacquainted with both.

BUFFALOE. Add—*East Buffaloe* contains 2869, and *West Buffaloe* 2523 inhabitants.—Also, a township of Pennsylvania, in Washington county, having 1416 inhabitants.—Also, a township in Armstrong county, in the same state, having 1150 inhabitants.—Also, a township of Butler county, with 375 inhabitants.—Also, a township of Ohio, in the county of Guernsey, having 285 inhabitants.—Also, a township of Ohio, in the county of Jefferson, having 696 inhabitants.

BUFFY *Coat of the Blood, Chemical Properties of.* See BLOOD, section *Fibrin.*

BUILDING, col. 10, l. 47, for 42d *r.* 14th.

BUILTH, or BUALLT, derived from *Bu*, an ox, and *allt*, an eminence, *i. e.* a wooded eminence, bearing reference to the adjacent country. Col. 2, l. 13, for two weekly *r.* one good market on Monday; for three *r.* five; after contains, *r.* by returns of 1811, 182 houses, and 815 inhabitants; 384 being males, and 431 females. The hundred of Builth included 1086 houses, and 5788 persons; 2698 being males, and 3090 females: 833 employed in agriculture, and 284 in trade, manufactures, and handicraft.

BULLET, a county of Kentucky, having 4311 inhabitants, including 976 slaves.

BULLOCK, a county of Georgia, in America, containing 2305 inhabitants, 420 being slaves.

BULLSKIN. Add—containing 1439 inhabitants.

BUMCOMBE, a county of North Carolina, containing 9277 inhabitants, of whom 695 are slaves.

BUMEN. See REGAN.

BUMGALOW, a term used in Bengal for a kind of country-house erected by Europeans.

BUNIUM, col. 2, l. 20, for They *r.* Ray.

BUPHAGA, l. 6, for legs *r.* feet.

BUPRESTIS. At the close, *dele* which see respectively, and add—The *B. gigantea* is the largest of this genus hitherto discovered, being two and a half inches long; a native of India, China, and many other parts of Asia; and found also in South America. The European insects of this genus fall far short of the Indian or American species both in size and splendour.

BURCHARDIA, in *Botany*, is thus named by Mr. Brown, in commemoration of Dr. John Henry Burchard, author of a letter to Leibnitz, in 1702, in which the soundest principles of botany are developed; the exclusive importance of the parts of fructification, in forming characters, are especially insisted on, and the classification of Linnæus, by the stamens and pistils, is anticipated. Heister published this letter, for the first time, in 1750, probably to depreciate the honour of Linnæus. But as the latter could have heard nothing of Burchard's sentiments, he has all the merit of originality, and the attempt to deprive him of this credit, serves only to shew the high estimation in which his performance was held. Heister has named a plant *Burchardia*, but this is *Callicarpa* of Linnæus, so called many years before.—Brown Prodr. Nov. Holl. v. 1. 272.—Class and order, *Hexandria Trigynia.* Nat. Ord. *Melanthaceæ*, Br.

Eff. Ch. Petals six, equal, spreading, with a nectariferous cell in the claw of each, deciduous. Stamens inserted into the base of the petals. Anthers peltate, posterior. Germen triangular. Stigmas acute. Capsule of three separable boat-like cells, bursting at the inner edge. Seeds numerous, in two rows.

1. B. *umbellata.* Umbellate Burchardia. Br. n. 1.—Native of Port Jackson, New South Wales. *Root* of several thick clustered fibres. *Herb* smooth. *Stem* simple, leafy. *Leaves* linear, with entire sheaths; the upper one half embracing the stem. *Umbel* simple; its stalks without a joint, and with a single *bractea* at the base of each. *Flowers* white. *Anthers* purple. *Brown.*

BURGH *upon the Sands*, l. 4, *r.* as he was preparing for an expedition against the Scots. Hume.

BURICH. For BUDERICH *r.* BUDELICH.

BURKE, in *Geography*, l. 2, *r.* 11,007; l. 3, *r.* 1433; l. 5, *r.* 10,747 and 4691; l. 9, add—containing 460 inhabitants.

BURKSVILLE, a town of Kentucky, in Cumberland county, containing 106 inhabitants, of whom 20 are slaves.

BURLINGTON, l. 6 and 7, for 18,095 *r.* 24,979, and for 227 *r.* 93; add—It contains 12 townships; l. 13, *r.* 2419, and 4 slaves.

BURLINGTON, a township of America, &c. l. 3, add—This township is well watered, and abounds with mill-heats; its situation is elevated, and the air salubrious: the population is 3196; the senatorial electors 294, and the taxable property,

property, in 1810, amounted to 178,783 dollars. It has two Baptist meeting-houses, one for Congregationalists, and one for Quakers. The inhabitants are principally farmers.

Burlington, a town of Massachusetts, in Middlesex county, containing 471 inhabitants.—Also, a town of Hartford county, in Connecticut, having 1467 inhabitants.—Also, a township of Lycoming county, in Pennsylvania, having 661 inhabitants.

BURNING, *Extraordinary Cases of.* Col. 3, l. 11, for of the head *r.* and the head; l. 5, for 332 *r.* 1690.

BURNLEY, l. *ult.* after contains, add—by the return of 1811, 807 houses, and 4368 inhabitants; 2129 being males, and 2239 females.

BURRILLVILLE, a town of Rhode island, in the county of Providence, containing 1834 inhabitants.

BURSARIA, in *Botany*, so denominated by Cavanilles, from *bursa*, a purse; because the seed-vessel resembles that of the common weed called Shepherd's-purse.—Cavan. Ic. v. 4. 30. Ait. Hort. Kew. v. 2. 36.—Class and order, *Pentandria Monogynia*. Nat. Ord.........

Eff. Ch. Petals five, inserted into the receptacle. Capsule superior, compressed, of one cell, with four valves. Seeds two, winged.

1. B. *spinosa*. Thorny Bursaria. Cavan. Ic. v. 4. 30. t. 350. Ait. n. 1. (Itea spinosa; Andr. Repos. t. 314.)—Native of New South Wales; first raised in 1793, by the late marchioness of Rockingham. This is a thorny, bushy, green-house shrub, flowering from August to December. The *leaves* are scattered, sessile, narrow-wedgeshaped, emarginate, smooth, entire. *Flowers* numerous, white, small, in copious, aggregate, terminal clusters, of considerable elegance.

BURTON *in Kendal*, l. *ult.* after contains, add—by the return of 1811, 94 houses, and 574 persons; 274 being males, and 300 females. There is another township, named Holme, in the same parish, containing 43 houses, and 283 persons; 137 being males, and 146 females.

Burton-*upon-Trent*, l. 4 from the close, add—By the return of 1811, contains 785 houses, and 3979 persons; 1844 being males, and 2135 females.

Burton, l. 1, for Grafton *r.* Strafford; for 143 *r.* 194. Add—Also, a township of Ohio, in the county of Geauga, having 517 inhabitants.

BURTONIA, in *Botany*, so named by Mr. Brown, in memory of the late Mr. David Burton, a celebrated collector of plants for the Kew garden, under the patronage of sir Joseph Banks. He died after a short stay in New South Wales; but Mr. Aiton's work evinces the great diligence of this unfortunate traveller. Mr. Salisbury's original *Burtonia* proved an Hibbertia. (See that article.)—Brown in Ait. Hort. Kew. v. 3. 12.—Class and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Eff. Ch. Calyx deeply five-cleft. Corolla papilionaceous, deciduous; petals nearly of equal length. Germen two-seeded. Style awl-shaped, dilated at the base. Stigma obtuse, beardless. Lgeume roundish, somewhat tumid. Seeds without any appendage. *Br.*

1. B. *scabra*. Rough-leaved Burtonia. Ait. n. 1. (Gompholobium scabrum; Sm. Tr. of Linn. Soc. v. 9. 250.)—Leaves ternate. Calyx smooth. Style bearded beyond the middle.—Found by Mr. Menzies, on the south-west coast of New Holland; and sent to Kew by Mr. Good, in 1803. A green-house shrub, flowering from May to July. The *leaves* are ternate, sessile, linear, revolute, rough to the touch. *Flowers* about the ends of the branches, axillary, dull purple when dried. There is no account of their natural colour. We do not perceive any important difference in character, and there is none in habit, between this plant and Gompholobium (see that article); but the unpublished species may be more distinct.

BURY, l. 10, after Peele, add—created a baronet in 1800, who, about the year 1773; l. 15, add—In the course of his prosperity he purchased a seat at Chamber-hall, in the neighbourhood, which he afterwards sold; l. 18, for Bolton in Yorkshire *r.* Bolton-le-Moors in Lancashire; l. 23, *r.* the wheel or fly-shuttle, invented about one hundred years ago by Mr. John Kay, who, on account of the persecution he suffered on this account, was obliged to remove to France, where he died; and the card-making machine, for making several cards at once, invented by Mr. Robert Kay, the son of the former, who died about the year 1804. This machine straightens, &c.; l. 29, after shaft, add—and touching neither the wire nor the leather. The woollen manufactures, consisting of flannels, blankets, and a variety of other articles, were established in this town long before the introduction of the cotton trade, and contributed in no small degree to its prosperity; l. 47, *r.* in 1811, the number of houses in this township was 1562, and the number of inhabitants was 8762; 4219 being males, and 4543 females. The parish of Bury includes six townships, *viz.* Bury, Elton, Heap, Higher and Lower Tottington, and Walmersley.

Bury *St. Edmund's*, col. 3, l. 3, *r.* In 1811 this borough had 1474 houses, and 7986 inhabitants; 3539 being males, and 4447 females: 164 families employed in agriculture, and 966 in trade and manufactures.

BUSHEL. Add—See Coal-*Bushel* and Weight.

BUTE. The shire of Bute, by the parliamentary return in 1811, contains 2047 houses, and 12,033 persons; 5545 being males, and 6488 females: 1216 families employed in agriculture, and 530 in trade, manufactures, and handicraft.

BUTLER, *r.* Butter, William.

Butler, in *Geography*, a county of Pennsylvania, containing 7346 inhabitants.—Also, a township of this county, having 458 inhabitants.—Also, a township of Ohio, in the county of Columbiana, having 316 inhabitants.—Also, a county of Kentucky, containing 2181 inhabitants, of whom 274 are slaves.

BUTTER, *Chemical Properties of.* See Milk.

BUXTON. In 1811 the township contained 180 houses, and 934 inhabitants; 447 being males, and 487 females.

Buxton, a township of America, l. 5, *r.* 2324.

BYRAM, a town of New Jersey, in the county of Essex, having 1224 inhabitants.

C.

CABAL, l. *ult.* after Shaftſbury, inſert—lord Aſhley.

CABARRAS, in *Geography*, a county of N. Carolina, with 6150 inhabitants, of whom 1234 are ſlaves.

CABELL, a county of Virginia, with 2717 inhabitants, of whom 221 are ſlaves.

CABINET, col. 2, l. 47, *r.* whether they be.

CABOS. Add—The former contains 974, and the latter 1003 inhabitants.

Cabos, in *Geography*, a town of Caledonia, in the diſtrict of Vermont, having 886 inhabitants.

CACHOLONG. See Mineralogy, *Addenda*.

CADIZ, in *Geography*, a town of Jefferſon county, in Ohio, with 1374 inhabitants.

CADMIUM, in *Chemiſtry*, the name of a metal. This metal was diſcovered by M. Stromeyer in the autumn of 1817, while he was officially examining the apothecaries' ſhops in Hanover.

Cadmium reſembles tin in its colour, luſtre, ſoftneſs, ductility, and the ſound it produces when bent. Its ſp. gr. is 8.6359. It melts and volatilizes at a temperature a little lower than zinc. It preſerves its ſplendour in the air, but by heat it is changed into a yellow oxyd, which is not volatile, and which is very eaſily reduced. This oxyd does not colour borax; it diſſolves very readily in acids, and forms colourleſs ſalts, from which it is precipitated white by alkalies. The hydroſulphuric acid (ſolution of ſulphuretted hydrogen) precipitates it yellow, like arſenic. Zinc precipitates it in the metallic ſtate.

This is all which at preſent we know of this metal, except that it was firſt obtained from the ſublimate which concretes in the chimnies of the zinc furnaces of Saxony; and, conſequently, that it exiſts in the ores of zinc there employed. We underſtand alſo that it has been detected in ſome ſimilar ores of zinc in this country.

CAERFILLY, &c. col. 2, l. 49, add—It has a market on Thurſday, and ſix fairs in the year. By the parliamentary returns of 1811, the number of houſes in this hamlet of Eglwyſilan pariſh was 196, and of inhabitants 1013, *viz.* 462 males, and 551 females.

CAERLEON, col. 3, l. 18 from bottom, *r.* The town conſiſts, by the return of 1811, of 170 houſes, and 593 inhabitants.

CAERMARTHEN, col. 3, l. 17, after it contains, add—by the parliamentary returns in 1811, 1189 houſes, and 7275 inhabitants. The charter allows three markets, *viz.* on Wedneſday, Friday, and Saturday, but the latter is the only one numerouſly attended by the farmers. It has four fairs in the year, and, &c.

CAERMARTHENSHIRE, l. 7,—others reckon its length 50, and breadth 25 miles. Cary eſtimates its ſuperficial contents at 512,000 acres; l. 23, The Towy is much celebrated for its fiſh; its ſalmon is highly eſteemed; as is alſo its ſewin. The other rivers, not above enumerated, are, the Llougher, Lloghor, or Lycher, which ſeparates this county for ſome diſtance from Glamorganſhire, receiving in its courſe the Amman, which united ſtreams diſcharge themſelves into Caermarthen bay, by a wide eſtuary called the Bury river, navigable for ſmall veſſels as high as the town of Lloghor. Another river, denominated Gwendraeth vawr, or great, has its ſource in a lake at the upper extremity of Mynudd mawr, and joins the ſea below Kidwelly: this is joined by Gwendraeth vach, or the leſs. Other rivers are the Pycottwr, which falls into the Dethia, and the Camdwer, which augments the Towy. The river Bran unites with the Towy below Llandovery; the other tributary ſtreams are, the Sawddy, proceeding from a lake in the Black mountain, and the Cennen, which join the Towy, as well as the Cothy and Gwilly, already mentioned. The Corwen and the Taf unite at the village of St. Clears, and run into the Caermarthen bay at Laugharne. The lakes of this county are Llyn Tagwyn, or pwll yr Eſcob, or the Biſhop's pool, ſituated at the northern extremity, and on the higheſt elevation of Mynudd mawr, an extenſive bleak common, W. of Llandybie, and occupying a ſurface about half a mile in diameter. Another lake is ſituated on the Black mountain, at the foot of the almoſt perpendicular declivity of the Caermarthenſhire Fan, or beacon, and extending in form of a parallelogram about one mile in its greateſt length. The other lakes are two, which communicate by a ſtrait, and appear like one, ſituated on the banks of the river Cothy, and near the ruins of the abbey of Talley. The mountains are part of Plinlimmon, and on the E. the long chain called the Black mountain, the ſummit of which, called y Fan, or Ban Sir Gaer, the Caermarthenſhire beacon, is the higheſt ground in the county. The height of this peak has been eſtimated at about 2600 feet above the level of the ſea. It is ſeparated by a chaſm from another eminence, of ſuperior altitude, in Brecknockſhire. Both are denominated Bannau Sir Gaer, or Caermarthenſhire beacons, in the plural, to diſtinguiſh them from thoſe called Bannau Brecheinog, or the Brecknockſhire beacons. Another mountain lies on the borders of Glamorganſhire, called Bettws mountain; it is a chain diverging from the Black mountain, at the upper end of the valley of Tawe, and ſtretching along the eaſtern ſhore of the Amman and Lloghor nearly to the ſea:—l. 37—The number of pariſhes has been variouſly eſtimated; ſome having reckoned them at 76, others at 85, and others at 78, beſides 12 chapelries. The number of market-towns is ſtated at eight. This county, by the laſt return in 1811, contained 14,856 houſes, and 77,217 inhabitants; 9878 families employed in agriculture, and 5256 in trade and manufactures.

CAERNARVON. Add—In 1811 the pariſh of Llanbeblig,

beblig, in which it is ſituated, contained 1000 houſes, and 4595 perſons; *viz.* 1982 males, and 2613 females.

CAERNARVON, a townſhip of America, &c. l. 2, add—containing 1084 inhabitants.—Alſo, a townſhip of Berks county, in Pennſylvania, having 723 inhabitants.

CAERNARVONSHIRE, l. 17, *r.* In 1811 this county contained 9369 houſes, and 49,336 perſons; *viz.* 23,379 males, and 25,957 females: 6667 families employed in agriculture, and 2687 in trade and manufactures.

CAERWENT. Add—The pariſh of Caerwent, in 1811, contained 60 houſes, and 375 perſons; *viz.* 206 males, and 169 females.

CAERWYS. Add—In 1811, the pariſh of Caerwys contained 209 houſes, and 863 perſons; *viz.* 416 males, and 447 females.

CÆSARIA, *r.* COHAWZY.

CÆSIA, in *Botany*, dedicated by Mr. Brown to the memory of Frederico Cæſio, a young Roman nobleman, illuſtrious for the patronage and cultivation of ſcience, eſpecially of natural hiſtory, who founded the academy of the *Lyncæi* at Rome in 1603. This was the firſt inſtitution of the kind, and is celebrated in various authors of that day. The great Galileo was among its members, as well as that indefatigable botaniſt Fabio Colonna, better known by his Latin appellation, Columna. This inſtitution died with its noble founder, in 1630; but the ſcientific aſſociations of Italy, and thence of all Europe, have ſprung from its aſhes. — Brown Prodr. Nov. Holl. v. 1. 277. — Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Coronariæ*, Linn. *Aſphodeli*, Juſſ. *Aſphodeleæ*, Br.

Eſſ. Ch. Corolla in ſix deep, equal, ſpreading ſegments, deciduous. Filaments beardleſs, contracted at each end. Anthers attached by their cloven baſe. Germen of three cells, with two ſeeds in each. Style thread-ſhaped. Stigma one. Capſule ſcarcely valvular; tumid and lobed at the ſummit; or club-ſhaped. Seeds tumid, with an appendage to the ſcar.

Herbs generally annual, ſmooth. *Root* of cluſtered, thick fibres, or oblong knobs. *Leaves* graſſy. *Cluſters* either divided or ſimple, with aggregate or ſolitary flower-ſtalks, jointed under the corolla. *Flowers* whitiſh, or blue, erect, rarely drooping. *Corolla* becoming ſpiral after flowering, and ſoon falling off entire. *Anthers* yellow.

This genus approaches the *Phalangium* of Juſſieu, but differs abundantly in the ſtructure of the *germen* and *ſeeds.*

1. C. *vittata.* Striped Cæſia. Br. n. 1.—Flowers drooping. Stamens pendulous, with parti-coloured filaments. Cluſters divided or ſimple. Leaves flattiſh. Bulbs faſciculated.—Gathered by Mr. Brown at Port Jackſon, and Van Diemen's land.

2. C. *parviflora.* Small-flowered Cæſia. Br. n. 2.—Flowers erect. Filaments ſimple-coloured. Cluſters panicled. Root fibrous.—From the ſame countries.

3. C. *occidentalis.* Weſt-coaſt Cæſia. Br. n. 3. — Flowers erect. Filaments ſimple-coloured. Cluſters ſcarcely divided. Leaves thread-ſhaped, channelled. — Found by Mr. Brown, in the ſouth-weſt part of New Holland.

4. C. *corymboſa.* Unbranched Cæſia. Br. n. 4.—Common flower-ſtalk radical, unbranched. Corymb of few flowers. Leaves flattiſh. — Native of the ſouth coaſt of New Holland, and of Van Diemen's land.

5. C. *lateriflora.* Lateral-flowered Cæſia. Br. n. 5.—Stem much branched, ſcaly. Flowers lateral, drooping, moſtly ſolitary. Capſule club-ſhaped, pendulous, generally ſingle-ſeeded.—Gathered by Mr. Brown, in the tropical part of New Holland. The *filaments* are roughiſh, and the habit, inflorescence, and capſule differ greatly from all the other ſpecies. *Brown.*

CAFFISE, or CAHIZ, in *Commerce*, a meaſure for corn in Spain, containing 12 fanegas. See FANEGA.

CAFFISO, a meaſure for oil in Sicily, weighing $12\frac{1}{2}$ rotoli, or about 24 lbs. avoirdupois.

CAHOKIA, in *Geography*, a townſhip of St. Clair county, in the Illinois country, with 711 inhabitants.

CAJEPUT OIL, l. 2,—leaves of a ſpecies of the Melaleuca, a tree, &c.

CAITHNESS. By the parliamentary returns of 1811, the ſhire of Caithneſs contained 4301 houſes, and 23,419 perſons; *viz.* 10,608 males, and 12,811 females: 3270 families employed in agriculture, and 838 in trade and manufactures.

CAKILE, in *Botany*, an Arabic name, uſed by Serapio. —Tourn. Cor. 43. t. 483. Gærtn. v. 2. 287. t. 141. Willd. Sp. Pl. v. 3. 416. Brown in Ait. Hort. Kew. v. 4. 71.—Claſs and order, *Tetradynamia Siliculoſa.* Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch of two ſingle-ſeeded joints; ſeed of the uppermoſt erect, ſeſſile; of the lower pendulous.

Obſ. The lower joint is occaſionally abortive.

This genus is the real *Bunias* of Linnæus, nor can we ſee why that name ſhould be changed for the barbarous *Cakile*, though we agree with Mr. Brown in removing hither ſeveral ſpecies of *Myagrum*, as in the Prodr. Fl. Græc.

CALABOSO, in *Geography*, a town of South America, in Venezuela, ſituated between two rivers, *viz.* Guarico to the W. and Orituco to the E. which unite their waters four or five leagues below the town. It is ſituated in a hot climate, in N. lat. 8° 40′, 52 leagues S. of Caraccas, and at about the ſame diſtance N. of the Oronoko, and in the year 1804 its population amounted to 4800 perſons.

CALADENIA, in *Botany*, from καλος, *handſome*, and αδην, *a gland*, alluding to the beautiful rows of glands on the lip.—Brown Prodr. Nov. Holl. v. 1. 323. Ait. Hort. Kew. v. 5. 203. (Arethuſa; Sm. Exot. Bot. v. 2. t. 104.) — Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Upper calyx-leaf rather flattened; two lower, with the petals, deflexed under the lip, flat; all glandular at the back. Lip ſomewhat ſtalked, with rows of glands on its diſk. Style winged. Anther a moveable lid. Pollen powdery.

An elegant tribe of ſmall herbaceous plants, clothed with glandular, intermixed with ſimple, hairs. *Bulbs* undivided, terminating the deſcending baſe of the ſtem, incloſed in a ſcaly coat. *Leaf* ſolitary, nearly radical, moſtly linear, encloſed by a ſheath at the baſe. *Stalk* bearing one *bractea*, beſides thoſe immediately accompanying the one, two, or three inodorous, variouſly-coloured, *flowers.* *Anther* moſt frequently pointed.

Mr. Brown defines thirteen genuine ſpecies, from various parts of New Holland. Theſe have, as it were, ringent *flowers*, the *petals* nearly equal to the two lower *calyx-leaves*, and forming with them an under lip, while the upper conſiſts of the upper leaf of the *calyx*, not quite ſo flat as the reſt. To theſe are ſubjoined two ſpecies, whoſe *petals* are very long, narrow, and directed upwards; and to theſe, as poſſibly a diſtinct genus, the name of *Leptoceras* is given.

Of the true *Caladeniæ*, the firſt only, *C. alba*, has been brought alive to England, by Mr. Geo. Caley in 1810, and is marked by Mr. Aiton as a green-houſe plant, flowering in July and Auguſt.—The fifth ſpecies, *C. alata*, is probably *Arethuſa catenata*, Sm. Exot. Bot. v. 2. 89. t. 104.

CALADIUM, a name uſed by Rumphius, for ſome kinds

kinds of *Arum*, and therefore retained by Ventenat for this genus, which is extracted from that. — Venten. Jard. de Cels, 30. Brown Prodr. Nov. Holl. v. 1. 336. Willd. Sp. Pl. v. 4. 487. Ait. Hort. Kew. v. 5. 310.—Clafs and order, *Monoecia Polyandria*. Nat. Ord. *Piperitæ*, Linn. *Aroideæ*, Juff. Br.

Eff. Ch. Sheath of one leaf; convolute at the bafe. Spadix covered at the fummit with peltate many-celled anthers; glandular in the middle; covered with germens at the bafe. Stigma umbilicated. Berries of one cell, with many feeds.

This genus, differing from *Arum* chiefly in the *fpadix* being covered in all its upper part with *ftamens*, except, in fome inftances, a fmall naked point, is divided like that, (fee Arum,) into three fections, fimilarly diftinguifhed. Willdenow has fifteen fpecies in all.

Sect. 1. *Stem none. Leaves compound.* One fpecies.

1. C. *helleborifolium*. Hellebore-leaved Caladium. Willd. n. 1. Ait. n. 1. (Arum helleborifolium; Jacq. Coll. v. 3. 217. Ic. Rar. t. 613.)—Leaves radical, pedate, entire. —Native of woods in Martinico and the Caraccas. The *flowers* are greenifh-white, on radical ftalks. *Leaves* a foot in breadth, of eleven elliptic, acute *leaflets*.

Sect. 2. *Stem none. Leaves fimple.* Six fpecies, to which we add one.

2. C. *pinnatifidum*. Pinnatifid Caladium. Willd. n. 2. (Arum pinnatifidum; Jacq. Hort. Schoenbr. v. 2. 31. t. 187.)—Stem none. Leaves pinnatifid.—Native of woods at the Caraccas, where this large fpecies grows on rocks and trees. The *leaves* are two feet long, and nearly as broad, deeply pinnatifid, with great red ribs. *Flowers* almoft feffile; blood-red in their lower half; white, like the *fpadix*, above. The reft are,

3. C. *ovatum*. Ovate Caladium. (Arum ovatum; fee our n. 22. Linn. Sp. Pl. 1371. Karin pola; Rheede H. Mal. v. 11. 45. t. 23.)

4. C. *bicolor*. Two-coloured Caladium. Vent. Cels, t. 30. Ait. n. 2. (A. bicolor; n. 10. Curt. Mag. t. 820. Jacq. Hort. Schoenbr. v. 2. 30. t. 186.)—This was long miftaken for *Arum pictum*, Linn. Suppl. 410.

5. C. *nymphæifolium*. Water-lily-leaved Caladium. Willd. n. 5. Ait. n. 3. (Weli-ila; Rheede H. Mal. v. 11. 43. t. 22.)—Stem none. Leaves peltate, ovate-arrowfhaped. Sheath cylindrical, with a lanceolate point, fhorter than the fpadix.—Native of the Eaft Indies.

6. C. *efculentum*. Eatable Caladium, or Indian Kale. Ait. n. 4. (Arum efculentum; n. 11. A. minus, nymphææ foliis, efculentum; Sloane Jam. v. 1. 167. t. 106. f. 1.)

7. C. *acre*. Acrid Caladium. Br. n. 1.—Stem none. Leaves peltate, heart-fhaped. Spadix obtufe, with a very fhort, occafional, naked point. Sheath lanceolate, twice as long as the fpadix.—Gathered in the tropical part of New Holland by Mr. Brown, who remarks that it fcarcely differs, except in having *anthers* to the fummit of the *fpadix*, from the laft, which has a manifeft acute naked point, and he does not fee how the latter is diftinguifhed from *Arum Colocafia*.

8. C. *fagittifolium*. Arrow-leaved Caladium. Willd. n. 7. Ait. n. 5. (Arum fagittifolium; n. 16. Jacq. Hort. Vind. v. 2. 73. t. 157.)

Sect. 3. *With leafy ftems.* Eight fpecies.

9. C. *fcandens*. Climbing Caladium. Willd. n. 8. ("Culcafia fcandens; Beauv. Fl. Ov. et Ben. 4. t. 3.") —Climbing. Leaves ovate-oblong, pointed. Spadix longer than the hooded fpatha.—Native of Benin, on the coaft of Africa.

10. C. *feguinum*. Dumb-Cane Caladium. Willd. n. 9. Ait. n. 6. (Arum feguinum; n. 26. Linn. Sp. Pl. 1371.)

11. C. *xanthorrhizon*. Yellow-rooted Caladium. Willd. n. 10. (Arum xanthorrhizon; Jacq. Hort. Schoenbr. v. 2. 32. t. 188.)—Stem erect. Leaves heart-arrowfhaped. Sheath hooded, contracted in the middle, longer than the fpadix.

12. C. *grandifolium*. Great-leaved Caladium. Willd. n. 11. Ait. n. 7. (Arum grandifolium; Jacq. Hort. Schoenbr. v. 2. 32. t. 189.)—Stem taking root. Leaves heart-arrowfhaped. Spatha with an ovate hood, not longer than the fpadix.—On rocks and trees at the Caraccas.

13. C. *arborefcens*. Tree Caladium. Willd. n. 12. Ait. n. 8. (Arum arborefcens; n. 25. Linn. Sp. Pl. 1371.)

14. C. *lacerum*. Jagged Caladium. Willd. n. 13.—"Stem taking root. Leaves heart-fhaped, finuated."—Parafitical on trees at the Caraccas. Sent by Jacquin, under the above name, to Willdenow.

15. C. *tripartitum*. Three-leaved Caladium. Willd. n. 14. (Arum tripartitum; Jacq. Hort. Schoenbr. v. 2. 33. t. 190.)—Stem taking root. Leaves ternate. Footftalks naked. Spadix the length of the ovate-hooded fheath. —From the Caraccas.

16. C. *auritum*. Ear-leaved Caladium. Willd. n. 15. Ait. n. 9. (A. auritum; n. 29. Linn. Sp. Pl. 1371. Jacq. Hort. Schoenbr. v. 2. 33. t. 191.

CALAIS, l. 3, for 43 *r.* 41, a town of Wafhington county, in the diftrict of Maine, which by the cenfus of 1810 contained 372 inhabitants.—Alfo, a town of Caledonia county, in Vermont, containing 841 inhabitants.

CALCIUM, in *Chemiftry*, the metallic bafis of lime. See Lime.

CALDARA DA CARAVAGGIO, Polidoro, in *Biography*, an eminent painter, was born in the Milanefe, and from the humble ftation of a labourer became an affiftant of Raphael in the works of the Vatican, and at length acquired unrivalled celebrity in his imitation of the antique baffo-relievos, which he executed in chiaro-ofcuro. His ftyle was in fo peculiar a fenfe his own, that, having formed it, it alfo perifhed with him. His defign was without manner, compact, and correct. He had the art of tranfporting himfelf, fays his biographer, into the times of which he reprefented, the tranfactions, the coftume and rites, fo that nothing modern is difcerned in his works. Numerous as his performances once were at Rome, fcarcely a fragment remains, if we except the fable of Niobe, left in ruins by time and the rage of barbarians. For thefe loffes we are compenfated merely by the prints of Cherubino Alberti, and Henry Golzius, who engraved his gods, the Niobe, and the Brennus; and alfo by the etchings of Santes Bartoli and Galleftruzzi. On occafion of the pillage of Rome by Bourbon in 1527, Polidoro fled to Naples, where he was patronized by Andrea da Salerno, and gained fuch reputation that he began to form a fchool; but declining the profecution of this undertaking, he removed to Sicily. Having exchanged chiaro-ofcuro for colour, he painted at Meffina a numerous compofition of Chrift led to Calvary, which has been highly extolled by Vafari; and not long after the completion of this work, he was ftrangled in bed by a fervant, who wifhed to get poffeffion of his property. His manner, as a colourift, is faid to have been dim and pallid. He died in 1543, at the age of 51 years. Pilkington's Dict. of Painters by Fufeli.

CALDWELL, in *Geography*, a town of Effex county, in New Jerfey, containing 2235 inhabitants, of whom 54 are flaves.—Alfo, a county of Kentucky, with 4268 inhabitants, including 579 flaves.

CALECTASIA, in *Botany*, from καλος, *beautiful*, and εκτασις, *an extenfion*, or *dilatation*, alluding to the elegant ftar-like expanfion of the corolla.—Brown Prodr. Nov. Holl. v. 1.

v. 1. 263.—Clafs and order, *Hexandria Monogynia.* Nat. Ord. *Junci*, Juff. *Junceæ*, Br.

Eff. Ch. Calyx inferior, tubular, falver-fhaped; limb coloured, in fix deep fegments. Stamens inferted into the mouth of the tube. Anthers linear, converging, attached by the bafe. Germen of one cell, with rudiments of three erect feeds. Style thread-fhaped. Stigma fimple. Capfule membranous, fingle-feeded, enclofed in the hardened tube of the calyx.

1. C. *cyanea.* Blue Calectafia. Br. n. 1. Bot. of Terra Auftr. 77. t. 9.—Found by Mr. Brown, on the fouthern coaft of New Holland.—A little fhrub, flowering in December, very much branched, clothed with acerofe fheathing *leaves. Flowers* folitary, at the ends of the fhort branches. Tube of the *calyx* covered by the fheaths of the leaves; the limb prominent, like a bright blue ftar, of fix equal rays, the three outermoft downy underneath. This pretty genus is not very nearly allied to any other, though fomething like *Aphyllanthes*, but widely different in ftructure, and rather approaching Dasypogon, hereafter to be defcribed.

CALEDONIA, a county of Vermont, l. 2, *r.* 23; add—In 1810, it contained 18,750 inhabitants.

CALEIDOSCOPE, or Kaleidoscope, from καλος, *beautiful*, ειδος, *a form*, and σκοπεω, *to fee*, an inftrument recently invented by Dr. Brewfter, and for which he has obtained a patent, for the purpofe of creating and exhibiting an infinite variety of beautiful forms.

The inftrument in its fimpleft form confifts of two reflecting planes, inclined to each other, made either of two plates of glafs, blackened or filvered, or two metallic furfaces, or the two inner furfaces of a folid prifm of glafs, or rock-cryftal, from which the light fuffers total reflection. The plates may be of any length; but that which is moft convenient will be found to be from five to ten or twelve inches, or they may be made only two, three, or four inches long, provided diftinct vifion is obtained at one end, by placing at the other end an eye-glafs, whofe focal length is equal to the length of the reflecting-plane; their breadth fhould be about eight or nine-tenths of an inch when the length is fix inches; but it fhould increafe with the length, in order to have the aperture of the fame angular magnitude. Two edges of thefe reflectors, being made perfectly ftraight, are placed together by a particular contrivance, in fuch a manner, that their inclination, or the angle which they form, is exactly an even aliquot part of a circle, or a fourth, fixth, eighth, tenth, twelfth, fourteenth, &c. part of 360°. When the plates are thus fixed in a tube, and the eye placed at one end, as near as can be, in the line of the interfection of the two planes, it will perceive a circular field of view, compofed of as many luminary fectors as the number of times the angle formed by the reflectors is contained in 360°. Thefe fectors, excepting the one feen by direct vifion, and conftituting the angular aperture of the plates, are a feries of images of this aperture, formed by fucceffive reflections between the inclined reflectors. The images formed by one reflector from each of the plates lie on each fide of the direct aperture, and are inverted images of that aperture; the next two images formed by two reflections are images not inverted; and fo on throughout the whole feries, every two direct images being feparated by an inverted one.

From thefe obfervations, it will be feen that the caleidofcope is not an inftrument which produces beautiful forms by the *multiplication of fingle forms;* for it is demonftrable, that a fymmetrical and beautiful pattern cannot be produced by the repetition of any fingle form: and if it were poffible to conftruct a multiplying-glafs with mathematical perfection, and free from all the prifmatic colours, it would be impoffible to produce with it an arrangement of fimple forms, marked with fymmetry and beauty. The principle of the caleidofcope, therefore, is to produce fymmetry and beauty by the creation and fubfequent multiplication of compound forms, each of which is compofed of a direct and an inverted image of a fimple form.

The tube which holds the reflecting plates moves in another tube; and upon the outer end of the laft tube is placed a cell, or cap, for receiving a feries of object-plates, containing fragments of differently-coloured glafs and other fubftances placed at random. When one of thefe object-plates is placed in the cell, the inner tube is pufhed in as far as it will go; and the inftrument being held in one hand, the cell containing the object-plates may be removed round with the other, and the eye of the obferver being placed at the other will obferve the irregular maffes of colour arranged in an infinite variety of forms, mathematically fymmetrical, and highly pleafing to the eye.

If the object be put in motion, the combination of images will likewife be put in motion, and new forms, perfectly different, but equally fymmetrical, will fucceffively prefent themfelves; fometimes varying in the centre, fometimes emerging from it, and fometimes playing around it in double and oppofite ofcillations. When the object is tinged with different colours, the moft beautiful tints are developed in fucceffion, and the whole figure delights the eye by the perception of its form, and the brilliancy of its colouring.

The effects, of which we have given a general defcription, obvioufly arife from inverfion and fubfequent multiplication of every object placed before the angular aperture, or the luminous fector feen by direct vifion, and from the perfect junction of all the reflected images. When the object is moved, the inverted images all feem to move in an oppofite direction, while the images not inverted move in the fame direction with the object: and from thefe oppofite motions, as well as from the entrance of new objects, by the revolution or the direct motion of the object-plate, arifes that endlefs variety of forms which affords fo much gratification to the eye.

In the preceding form of this inftrument, the object muft neceffarily be placed clofe to the end of the reflectors; for if it is removed from this pofition, the fymmetry is deftroyed, and the deviation from a fymmetrical form increafes as the diftance of the object from the reflector increafes. The ufe of the inftrument in this form is, therefore, limited to objects which can be held clofe to the reflector.

This limitation, however, has been fuperfeded; and the ufe and application of the inftrument indefinitely extended by an optical contrivance. A lens of a fhort focal length is placed on the object end of the outer tube, and the inner tube is drawn out till the image of objects, whatever be their diftance, falls exactly on the outer end of the reflectors. When this is the cafe, thefe objects will be arranged into the moft beautiful and fymmetrical forms, in the fame manner as if they had been reduced in fize, and actually placed at the end of the reflectors. In this way, every object in nature may be introduced into the picture formed by the inftrument, and the obferver will derive a new and endlefs fource of enjoyment by the creation of pictures of natural objects, whether animate or inanimate.

As the caleidofcope is of great ufe in the ornamental arts, particularly to carpet and lace manufacturers, calico-printing, paper-ftaining, jewellery, &c. &c., its adaptation to their purpofe is effected by occafionally furnifhing the inftrument with a ftand, in order that the pattern may be fixed whilft whilſt the artiſt is engaged in copying it. It is alſo capable of being uſed with Dr. Wollaſton's camera lucida, by which means thoſe who would otherwiſe be unable to copy the patterns may do it with perfect facility and accuracy. The effects of the inſtrument may alſo be exhibited to many perſons at once, on the principles of the ſolar microſcope, or magic lantern. The inſtrument for ſcientific purpoſes is occaſionally ſo conſtructed as to admit of the inclination of the reflectors being varied at pleaſure. Under the authority of Dr. Brewſter, caleidoſcopes of all the different forms are manufactured by the opticians with great accuracy and perfection; but the popularity of the inſtrument has been ſuch as to induce a great number of individuals, who have been ignorant of its principles, to infringe upon the patent, and impoſe upon the public a wretched imitation of the original, poſſeſſing none of the properties which are eſſentially neceſſary to the production of beautiful and ſymmetrical forms; and in order to juſtify ſuch proceedings, it became neceſſary to ſearch out for ſome combination of mirrors already deſcribed, which might have ſome reſemblance to Dr. Brewſter's inſtrument: and the firſt ſuppoſed anticipation of it was found in prop. 13 and 14 of Wood's Optics; but profeſſor Wood, in a letter to Dr. Brewſter on the ſubject, has moſt handſomely diſclaimed having in contemplation the effects produced by the caleidoſcope in giving the propoſitions alluded to. The next ſuppoſed anticipation was an inſtrument propoſed and made by Mr. Bradley in 1717, which conſiſted of two pieces of ſilvered looking-glaſs, five inches wide, and four inches high, jointed together with hinges, and opening like a book. Theſe plates being ſet upon a geometrical drawing, and the eye being placed in front of the mirrors, the lines of the drawing were ſeen multiplied by repeated reflections. This inſtrument had been deſcribed long before by Kircher, and did not receive a ſingle improvement from the hands of Bradley. It had been often made by the opticians; but no perſon ever thought of applying it to any purpoſe of utility, or of uſing it as an inſtrument of rational amuſement by the creation of beautiful forms: indeed, from its conſtruction, it is quite incapable of producing any of the ſingular effects of the caleidoſcope. As, however, the ſimilarity between the two inſtruments is maintained by many perſons, either from ignorance or intereſt; in order, therefore, to render that juſtice to Dr. Brewſter which to us appears his due, we give the following ſtatement of the differences between the two inſtruments, upon the ſuppoſition of their both being applied to geometric lines upon paper.

1. In Bradley's inſtrument, the length is leſs than the breadth of the plates.	1. In the caleidoſcope, the length of the plates muſt be four, five, or ſix times their breadth.
2. Bradley's inſtrument cannot be uſed with a tube.	2. The caleidoſcope cannot be uſed without a tube.
3. In Bradley's inſtrument, from the erroneous poſition of the eye, there is a great inequality of light in the ſectors, and the laſt ſectors are ſcarcely viſible.	3. In the caleidoſcope, the eye is ſo placed, that the uniformity of light is a maximum, and the laſt ſectors are diſtinctly viſible.
4. In Bradley's inſtrument, the figure conſiſts of elliptical, and conſequently unequal ſectors.	4. In the caleidoſcope, all the ſectors are equal, and compoſe a perfect circle, and the picture is perfectly ſymmetrical.
5. In Bradley's inſtrument, the unequal ſectors do not unite, but are all ſeparated from one another by a ſpace equal to the thickneſs of the mirror-glaſs.	5. In the caleidoſcope, the equal ſectors all unite into a complete and perfectly ſymmetrical form.
6. In Bradley's inſtrument, the images reflected from the firſt ſurface interfere with thoſe reflected from the ſecond, and produce a confuſion and overlapping of images entirely inconſiſtent with ſymmetry.	6. In the caleidoſcope, the ſecondary reflections are entirely removed, and therefore no confuſion takes place.
7. In Bradley's inſtrument, the defects in the junction of the plates are all rendered viſible by the erroneous poſition of the eye.	7. In the caleidoſcope, the eye is ſo placed, that theſe defects of junction are inviſible.

To which it may be added, that profeſſors Playfair of Edinburgh, and Pictet of Geneva, and the celebrated Mr. Watt, have each of them borne teſtimony to the diſſimilarity of the two inſtruments, and to the unqueſtionable claim which Dr. Brewſter has to the invention of the caleidoſcope.

CALENDAR. To the French calendar, annex—the French have aboliſhed their new calendar, and reſtored the Gregorian, which was ordered to be uſed in all their dates after the 1ſt of January, 1806.

CALEYA, in *Botany*, a very diſtinct and elegant genus, thus named by Mr. Brown, in juſt commemoration of Mr. George Caley, an able and accurate botaniſt, who has for ſeveral years been employed by ſir Joſeph Banks, in the inveſtigation of the vegetable productions of New South Wales, but whoſe diſcoveries are not all admitted into Mr. Brown's work, being, we hope, deſtined to appear in ſome more popular, and more amply deſcriptive, publication.—Brown in Ait. Hort. Kew. v. 5. 204. (Caleana; Br. Prodr. Nov. Holl. v. 1. 329.)—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Flower reverſed. Calyx-leaves and petals linear, nearly equal, ſpreading. Lip ſtalked, peltate, hollow, opening outwards. Style dilated. Anther a permanent lid. Pollen powdery.

There are two ſpecies, *C. major* and *minor*, both found near Port Jackſon; the former ſent to Kew, by Mr. Caley, in 1810. Theſe are ſmooth *herbs*, with ſimple naked bulbs. *Leaf* radical, ſolitary, linear, ſheathed at the baſe. *Flowers* few, browniſh-green; the *lip* and *column* red. The *lip* is moveable, reflexed; but during rain it becomes inflexed over the *column*, which Mr. Brown is doubtful whether to attribute to the diminution of light, or to the irritation of the rain.

CALICIUM, from καλυκιον, *a little cup*, well expreſſing the form of the fructification.—Perſ. in Uſt. Ann. faſc. 7. 20. Achar. Syn. 55. "Lichenogr. 39. t. 3. f. 1—8."—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Cruſt uninterrupted, uniform. Receptacles cup-ſhaped, cartilaginous, ſtalked, more or leſs elevated, containing a compact powdery maſs of ſeeds, forming an even diſk.

Acharius defines twenty-five ſpecies of this curious and beautiful, though minute and inconſpicuous genus of the *Lichen* tribe. They form grey, white, or yellow patches, of various extent, on old wrought wood, or boards, expoſed to the

the weather; sometimes on the old bark of trees. The *receptacles* are, most frequently, each elevated on a slender bristle-like *stalk*, usually black, like a horse-hair, and so different from the chalky or granulated *crust* from whence they grow, as to appear altogether parasitical. Their powder when touched stains the fingers. Sixteen species are described and figured in Eng. Bot. especially in vol. xxxv.

CALLICOMA, Curt. Mag. t. 1811. See CODIA.

CALLISTACHYS, or rather CALLISTACHYA. See OXYLOBIUM.

CALNE. The borough and parish of Calne, in 1811, contained 750 houses, and 3547 persons; *viz.* 1621 males, and 1926 females: 325 families employed in agriculture, and 402 in trade and manufactures.

CALOCHILUS, in *Botany*, from καλος, *beautiful*, and χειλος, *a lip*.—Brown Prodr. Nov. Holl. v. 1. 320.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx ringent; two lower leaves under the lip. Petals sessile, smaller, erect. Lip longer than the calyx, sessile, pointed; bearded at the margins and on the disk. Anther parallel to the stigma, permanent.

Herbage smooth. *Bulbs* undivided, naked. *Leaves* few, all on the stem; the lower one channelled, much longer than the rest. *Spike* racemose, lax, with prominent, reddish, rather large *flowers*. Nearly akin to NEOTTIA; see that article.

1. C. *campestris*. Br. n. 1.—Lip not much longer than the calyx, with a half-lanceolate point, one-fifth its own length. Column with two glands at the base. Bracteas longer than the germen. Flowers from four to eight.—Gathered by Mr. Brown at Port Jackson, as well as in the tropical part of New Holland.

2. C. *paludosus*. Br. n. 2.—Lip twice the length of the calyx, with a ligulate zigzag point, half its own length. Column without glands. Bracteas shorter than the germen. Flowers from two to four.—Found by Mr. Brown, at Port Jackson.

CALOCHORTUS, from καλος, *beautiful*, and χορτος, *a grass*. Pursh 240.—Class and order, *Hexandria Trigynia*. Nat. Ord. *Coronariæ*, Linn. *Junci*, Juss. *Melanthaceæ*, Brown.

Eff. Ch. Corolla in six deep spreading segments; three innermost largest; woolly above, with a smooth spot at the base. Filaments very short, inserted into the base of each segment. Anthers erect, arrow-shaped. Stigmas reflexed. Capsule of three cells.

1. C. *elegans*. Grassy Woolly-flower. Pursh n. 1.—Found by governor Lewis, at the head-waters of the Kooskoosky, North America, flowering in May. *Bulb* solid, globular, eaten by the natives. *Leaf* solitary, radical, grassy, ribbed, nearly smooth, taller than the *flower-stalk*, which is simple, round, smooth, bearing two or three very elegant, drooping, white *flowers*, the size of *Hypoxis erecta*, on slender *partial stalks*, each accompanied by a linear-lanceolate *bractea*. The three inner segments of the *corolla* are covered with long down, and marked with a roundish, smooth, purple spot at their base.

CALOGYNE, from καλος, *handsome*, and γυνη, *a female*.—Brown Prodr. Nov. Holl. v. 1. 579.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Campanaceæ*, Linn. *Campanulaceæ*, Juss. *Goodenoviæ*, Brown.

Eff. Ch. Calyx superior, in five deep equal segments. Corolla two-lipped. Anthers separate. Style three-cleft. Stigmas each with a cup-shaped integument. Nectary a gland between the two lower filaments. Capsule imperfectly two-celled. Seeds imbricated, compressed.

1. C. *pilosa*. Br. n. 1. the only species, found by Mr. Brown in the tropical part of New Holland. An annual hairy plant, smelling when dried like our *Anthoxanthum*. The *leaves* are cut or toothed; floral ones auricled at the base. *Stalks* axillary, single-flowered, without *bracteas*; reflexed as the *fruit* ripens.

This plant is separated from GOODENIA, (see that article,) solely on account of the three-cleft *style*, and three *stigmas*, and Mr. Brown hesitates about the propriety of the measure.

CALOMERIA. See HUMEA.

CALOPOGON, from καλος, *handsome*, and πωγων, *a beard*.—Brown in Ait. Hort. Kew. v. 4. 204.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Flower reversed. Calyx and petals spreading, distinct. Lip stalked; disk bearded. Style unconnected. Anther terminal, permanent; pollen angular.

1. C. *pulchellus*. Tuberous Calopogon. Ait. n. 1. (Limodorum tuberosum; Linn. Sp. Pl. 1345. Curt. Mag. t. 116. Cymbidium pulchellum; Swartz Nov. Act. Ups. v. 6. 75. Willd. Sp. Pl. v. 4. 105. Pursh 592. Big. Bost. 208.)—Native of meadows and mossy bogs, in North America, from Canada to Florida, flowering in July. An elegant plant, eighteen inches high, unbranched, with a small, tuberous, white *root*, one sheathing sword-shaped *leaf*, and a simple lax *spike*, of three or four large, beautiful, purple *flowers*, whose *lip* bears a yellow tuft of round-headed fibres. We cannot but think, with Mr. Salisbury, Parad. 89, that this is a genuine *Arethusa*, agreeing precisely in habit with *A. bulbosa*. Few orchideous genera are more natural.

CALOSTEMMA, from καλος, *beautiful*, and στεμμα, *a crown*.—Brown Prodr. Nov. Holl. v. 1. 297.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narcissi*, Juss.

Eff. Ch. Petals six. Nectary with twelve segments, bearing the stamens. Berry globose, with one or two seeds.

Distinguished from PANCRATIUM, as Mr. Brown observes, chiefly by the structure of the single-celled germen and pericarp. The *flowers* are small, not an inch long, either white or purple. The *seeds* germinate in the berry.

1. C. *album*. Br. n. 1.—Leaves elliptic-oblong, mostly solitary. Barren segments of the nectary linear, emarginate.—Native of the tropical part of New Holland.

2. C. *purpureum*. Br. n. 2.—Flower-stalk earlier than the leaves. Barren segments of the nectary triangular.—Found on the southern coast of New Holland.

CALOTHAMNUS, so named from καλος, *beautiful*, and θαμνος, *a shrub*, and it well deserves the appellation.—Labill. Nov. Holl. v. 2. 25. Brown in Ait. Hort. Kew. v. 4. 417.—Class and order, *Polyadelphia Icosandria*. Nat. Ord. *Hesperideæ*, Linn. *Myrti*, Juss.

Gen. Ch. *Cal.* Perianth half-superior, of one leaf, turbinate; limb in four or five short, broad, deciduous segments. *Cor.* Petals four or five, ovate, twice the length of the calyx, and alternate with its segments. *Stam.* Filaments very numerous, in four or five sets, opposite to the petals, the claw of each set flattened, oblong, many times longer than the corolla, some of them either combined together, or partially imperfect, pinnate, or otherwise many-cleft, in the upper part, with capillary segments; anthers terminal, inserted by their base, linear-oblong, undivided. *Pist.* Germen in the bottom of the calyx, small, roundish; style thread-shaped, erect, shorter than the stamens; stigma acute. *Peric.* Capsule coated with the base of the calyx, and firmly united to the branch, roundish, of three cells. *Seeds* numerous, small, oblong.

Eſſ. Ch. Calyx in four or five ſegments. Petals four or five. Stamens numerous, very long, in ſeveral various ſets, oppoſite to the petals; anthers linear, undivided, vertical. Capſule coated by the calyx, three-celled, permanent. *Seeds* numerous.

Obſ. The *ſtamens* in ſome ſpecies conſiſt of uniform ſets, anſwerable to the number of the *petals*; in others, two or more of thoſe ſets are partially combined laterally, the remainder being diminiſhed to ſimple threads, without *anthers*, and this laſt is the character of the genus as M. Labillardiere underſtood and deſcribed it. But Mr. Brown has, in conformity to nature and analogy, not limited it ſo ſtrictly. We adopt his views of the genus, only begging leave to conſtruct the eſſential character without exceptions, ſuch phraſeology being beſt avoided. The genus before us comes next to BEAUFORTIA, (ſee that article,) and is full as ſplendid, differing from it eſſentially in the ſtructure of the *anthers*, and in having numerous ſeeds. From MELALEUCA, (ſee that article in vol. xxiii.) the difference is leſs ſtriking, but we believe very eſſential, conſiſting in the vertical, not incumbent, *anthers*. To this Mr. Brown adds that the *infloreſcence* is unilateral.

1. C. *ſanguinea*. Blood-red Unequal Calothamnus. Labill. Nov. Holl. v. 2. 25. t. 164.—Flowers four-cleft. Sets of ſtamens combined; two of them imperfect, diſtinct. Adult *leaves* linear-awlſhaped, compreſſed, ſmooth.—Native of Lewin's land, flowering in December. A *ſhrub*, ſix feet high, with round, ſcarred branches. *Leaves* ſcattered, ſlender, acute, entire, rather above an inch long; hairy when young. *Flowers* in ſmall lateral ſeſſile tufts, about the length of the leaves, conſpicuous for their blood-red *ſtamens*, two ſets of which unite to form a broad, wedge-ſhaped, concave body, divided at the top into numerous, vertical, parallel *filaments*, each bearing an upright linear *anther*; the two remaining ſets diminiſhed to ſimple, awl-ſhaped threads, without any *anthers*. *Capſule* ſmall, globoſe.

2. C. *quadrifida*. Four-cleft Equal Calothamnus. Br. in Ait. n. 1. Sims in Curt. Mag. t. 1506.—Flowers four-cleft. Sets of ſtamens equal and diſtinct, with many anthers. Adult leaves ſmooth, as well as the fruit.—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland. Sent to Kew in 1803, by Mr. Good, along with the two following. This bears ſplendid ſcarlet *flowers*, whoſe beauty however depends on the large *ſtamens*, an inch and a half long, the *petals* being ſmall, pale, and inconſpicuous. The *leaves* are linear-obovate, or ſomewhat ſpatulate, but extremely narrow, hardly more than an inch in length.

3. C. *villoſa*. Hairy Five-cleft Calothamnus. Br. in Ait. n. 2.—"Flowers five-cleft. Sets of ſtamens equal and diſtinct, with numerous anthers. Adult leaves villous, as well as the fruit."—Found by Mr. Brown on the ſouth-weſt coaſt of New Holland. A green-houſe *ſhrub*, flowering at Kew, from July to September.

4. C. *gracilis*. Slender-leaved Calothamnus. Br. in Ait. n. 3.—"Flowers five-cleft. Sets of ſtamens equal and diſtinct, with only three anthers to each. Leaves elongated, ſmooth, as well as the prominent capſule. Stem branched." Native of the ſame country as the laſt.

No other ſpecies have been hitherto deſcribed.

CALOTROPIS, from καλος, *handſome*, and τροπις, *a keel*, alluding to the beauty of the flower, and the keel-ſhaped leaves which compoſe its crown.—Brown Tr. of Wern. Soc. v. 1. 39. Ait. Hort. Kew. v. 2. 78.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Br.

Eſſ. Ch. Corolla. Crown of the ſtamens ſimple, of five keel-ſhaped leaves, attached lengthwiſe to the tube of the ſtamens; recurved at the baſe. Maſſes of pollen ten, ſmooth, pendulous. Stigma pointleſs. Follicles tumid, ſmooth. Erect ſmooth milky *ſhrubs*, with broad oppoſite *leaves*, and handſome large *flowers*, in lateral corymboſe *panicles*, inſerted between the footſtalks. Only two ſpecies are deſcribed.

1. C. *procera*. Bell-flowered Auricula-tree. Ait. n. 1. (Aſclepias procera; Ait. ed. 1. v. 1. 305. Willd. Sp. Pl. v. 1. 1263. Schneev. Ic. t. 18. (See ASCLEPIAS, n. 29.) A. gigantea; Andr. Repoſ. t. 271. "Zja-raek; Le Brun Voy. 315. t. 184.")—Segments of the corolla ſpreading.—Native of Perſia. A ſtove ſhrub impatient of damp and cold, flowering from July to September. The whole plant is glaucous, ſix or ſeven feet high, with broad, ſeſſile, entire *leaves*. *Flowers* irregularly corymboſe, numerous, larger than in moſt of this tribe, an inch or more in width, of a rich browniſh-purple, powdered like an Auricula; pale beneath.

2. C. *gigantea*. Curled-flowered Auricula-tree. Ait. n. 2. (Aſclepias gigantea; Linn. Sp. Pl. 312, excluding the ſynonyms of Plukenet and Alpinus. Willd. Sp. Pl. v. 1. 1264. (See ASCLEPIAS, n. 6.) Ericu; Rheede Hort. Mal. v. 2. 53. t. 31.)—Segments of the corolla reflexed, with twiſted points.—Native of ſandy ground on the coaſt of Malabar. Very like the foregoing, but the *corolla* is differently ſhaped, as expreſſed in the character, and is ſaid to be variegated with white and purpliſh-red, ſmelling like a lily. We beg leave to obſerve, that if priority of date were to determine generic names, without regard to the ſound regulations of Linnæus, Mr. Brown's elegant *Calotropis* muſt give way to Rheede's *Ericu*, as the appellation of this genus, in ſpite of law, ſenſe, taſte, and convenience.

VOL. VI.

CALVERT, in *Geography*. Add—This county contained, in 1811, 8005 inhabitants, including 3937 ſlaves.

CALYPSO, in *Botany*, an elegant claſſical name of Mr. Saliſbury's, from καλυπτω, *to cover or conceal*, not merely alluding to the covering of the ſtigma, but preſerving a poetical analogy between this botanical beauty, ſo difficult of acceſs, and the ſecluded goddeſs, whoſe iſle was fabled to be protected miraculouſly from the obſervation of navigators.—Saliſb. Parad. 89. Brown in Ait. Hort. Kew. v. 5. 208. Purſh 593.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx-leaves and petals all turned upwards. Lip inflated, with a double ſpur in front. Column winged. Anther a terminal deciduous lid; maſſes of pollen four.

1. C. *borealis*. Northern Calypſo; Saliſb. Parad. t. 89. Purſh n. 1. (C. americana; Br. in Ait. n. 1. Cypripedium bulboſum; Linn. Sp. Pl. 1347. Fl. Lapp. ed. 2. 257. t. 12. f. 5. Sm. Spicil. 10. t. 11. Orchis lapponenſis monofolia; Rudb. Elyſ. v. 2. 209. f. 10. Serapias ſcapo unifloro; Gmel. Sib. v. 1. 7. t. 2. f. 1.)—Native of Ruſſia, and Oſtrobothnia, (*Linn.*) Nova Scotia, and ſeveral parts of the weſt coaſt of North America. *Menzies*. Found on the banks of the Columbia river, by governor Lewis. *Purſh*. *Root* of a few aggregate bulbous knobs. *Leaf* ſolitary, radical, ovate, many-ribbed, ſpotted. *Stalk* ſcaly, three to ſix inches high, bearing one large, beautiful, crimſon *flower*, with a purpliſh *lip*, bearded with yellow. We have in vain ſought for any permanent ſpecific difference between the American and European plant.

CALYSTEGIA, a genus ſeparated by Mr. Brown, Prodr. Nov. Holl. v. 1. 483, from *Convolvulus*, and chiefly diſtinguiſhed by the great ſize of the two leafy *bracteas*, incloſing

inclosing the calyx, whence the name, from καλυξ, and στεγω, *to cover*. *Convolvulus sepium* and *C. Soldanella* of Linnæus, with several others, constitute this genus, which appears to us better omitted.

CALY-YUG, denotes, according to the chronology of the Hindoos, the present or fourth age of the world.

CAMALODUNUM, l. 3, *r.* Trinouantes.

CAMBERWELL, a parish of Brixton hundred, in the county of Surrey, which includes the hamlets of Dulwich and Peckham, and in 1811 contained 1849 houses, and 11,309 persons; *viz.* 4854 males, and 6455 females; but since that time much increased in buildings and inhabitants.

CAMBIUM, l. 31, for CORTICAL LAYERS *r.* CORTEX; l. 39, for PITH and MEDULLARY CANAL *r.* MEDULLA. Col. 2, l. 5, *r.* MONOCOTYLEDONES.

CAMBRIA, in *Geography*, a county of Pennsylvania, containing 2117 inhabitants.—Also, a township of the same county, having 868 inhabitants.

CAMBRIDGE, col. 4, l. 7, add—By the return in 1811, the borough and university of Cambridge contained 1991 houses, and 11,108 persons; *viz.* 5288 males, and 5820 females: 80 families employed in agriculture, and 1600 in trade and manufactures.

CAMBRIDGE, in Washington county, &c. l. 2, *r.* census of 1810, 6730 inhabitants, and 650 senatorial electors; l. 10, for 2115 *r.* 2323; l. 38, *r.* 990.

CAMBRIDGE, a town of Guernsey county, in Ohio, having 474 inhabitants.

CAMBRIDGE, *West*, a township of Middlesex county, Massachusetts, having 971 inhabitants.

CAMBRIDGESHIRE, col. 1, l. *ult. r.* In 1811, this county contained 17,489 houses, and 101,109 persons; *viz.* 50,756 males, including 2946 local militia, and 50,353 females: 12,831 families employed in agriculture, and 5303 in trade, manufactures, and handicraft.

CAMDEN, a county of North America, l. 3, for 4033 *r.* 5347.

CAMDEN, a county in Georgia, &c. l. 3, *r.* containing 3941 inhabitants, of whom 2681 are slaves.

CAMDEN, in the district of Maine, contains 1607 inhabitants.

CAMDEN, a post-township of Oneida county, in the state of New York, watered by the W. branch of Fish creek, containing about 1100 inhabitants, principally farmers from Connecticut.

CAMELINA, in *Botany*, an old name of French origin, used by Dodonæus, but whether it alludes to this plant's being the companion of flax, *Linum*, as Crantz seems to intimate, is hardly worth enquiring.—Crantz Austr. fasc. 1. 17. Brown in Ait. Hort. Kew. v. 4. 93.—Class and order, *Tetradynamia Siliculosæ*. Nat. Ord. *Siliquosæ*, Linn. *Cruciferæ*, Juss.

Eff. Ch. Pouch nearly ovate, many-seeded: valves tumid. Cotyledons incumbent. Filaments without teeth. *Brown*.

Mr. Brown founds this genus on the *Myagrum sativum* of Linnæus, and the *M.* (not *Alyssum*) *austriacum* of Jacq. Austr. t. 111. The first is the only *Camelina* of Crantz above cited, who distinguishes it from ALYSSUM, (see that article,) by the connection between the *style* and the valves of the *pouch*, the *style* of *Alyssum* being connected with the *partition* only. Mr. Brown's distinction depends chiefly on the position of the *cotyledons*; for every *Alyssum* has not toothed filaments. Of *Myagrum austriacum* we do not feel competent to judge, but we are disposed to keep the *sativum* an *Alyssum*, as in Fl. Brit. and Engl. Bot. t. 1254, unless it could be set apart along with *Alyssum utriculatum* of Linn. Curt. Mag. t. 130, one species of Mr. Brown's and Lamarck's *Vesicaria*, very different from the original VESICARIA of Tournefort; see that article.

CAMPBELL, l. 3 and 4, *r.* 11,001 and 5368.

CAMPBELL, a town of Kentucky, containing 3060 inhabitants, of whom 438 are slaves.

CAMPBELL-*Town*. Add—The burgh and parish, in 1811, contained 1010 houses, and 7807 persons; *viz.* 3367 males, and 4440 females.

CAMPDEN, col. 2, l. 23 from the bottom, add—In 1811, it was stated to contain 273 houses, and 1214 persons; *viz.* 594 males, and 620 females.

CAMPTON, l. 5, *r.* 873.

CAMPYNEMA, in *Botany*, so named by Labillardiere, "from καμπυλος, *curved*, and νημα, *a filament*," see the character.—Labill. Nov. Holl. v. 1. 93. Brown Prodr. Nov. Holl. v. 1. 290.—Class and order, *Hexandria Trigynia*. Nat. Ord. *Asphodeleæ*, but doubtful, *Br.*

Eff. Ch. Petals six, superior, permanent. Filaments and styles recurved. Capsule of three cells, bursting at their inner angle. Seeds numerous, depressed, spongy.

1. C. *linearis*. Br. n. 1. Labill. t. 121.—Native of Cape Van Diemen. A smooth *herb*, with a *root* of several tapering fibres. *Leaves* grassy, alternate, half-clasping the stem. *Flowers* terminal, erect, either solitary, or from two to four in a lax cluster. *Anthers* versatile, heart-shaped. *Stigmas* simple. *Seeds* in a simple row, attached to the inner angle of each cell. Nothing is said of the colour of the *flower*.

CANAAN, l. 2, for Lincoln *r.* Somerset; l. 4, *r.* 1275; l. 7, *r.* 1810 and 1094; l. 12, add—In 1810, it contained 2203 inhabitants; l. 13, add—with 232 inhabitants.—Also, a township of Wayne county, in Pennsylvania, having 829 inhabitants.

CANAAN, *New*, a town of Fairfield county, in Connecticut, having 1599 inhabitants.

CANAL, col. 14, l. 44, add—The principal interior canals that are already (1818) completed in the United States are, the Middlesex canal, uniting the waters of the Merrimack river with the harbour of Boston, and the canal Carondelet, extending from Bayou St. John, a post of delivery in the Mississippi district, to the fortifications or ditch of New Orleans, and opening internal communication with lake Pontchartrain. The union of this canal by lakes with the Mississippi would, independently of other advantages, enable the government to transport with facility and effect the same naval force for the defence both of Mississippi and lake Pontchartrain, the two great avenues by which New Orleans may be approached from the sea. In 1816 or 1817, the state legislature of New York passed acts, appropriating funds for opening a navigable communication between the lakes Erie and Champlain and the Atlantic ocean, by means of canals, connected with the Hudson river. When this scheme, actually begun, is accomplished, and a communication opened by canals and lakes between lake Erie and the navigable waters of Hudson's river, and also between lake Champlain and these waters, the state of New York will soon become, in itself, a powerful empire.

Sheet Q q, instead of CANAL at the head of the page, insert in col. 1 and 2, CAN.

CANAL, p. 44, col. 2, l. 6 from the bottom, for thereon *r.* therein. P. 49, col. 1, l. 20, add—Mr. Chapman has lately (*viz.* in 1816) suggested to the editor, that this method, without complicated collateral aid, not had in contemplation, will be found to be impracticable; because the moment the descending crisson entered the lower canal, the equilibrium

equilibrium would be loſt, and all counterbalance when the criſſon had entered to ſuch depth as to allow its contained veſſel to go out.

For HARTLEPOOL CANAL *r.* HARTLEY CANAL; for Durham *r.* Northumberland; and for Hartlepool *r.* Hartley.

CANAL, *Baſingſtoke*, col. 2, l. 3, after commences in, inſert—Cooper's meadow, adjoining to the town of Baſingſtoke, and enters the river Wey about two miles above Weybridge; *dele*, l. 3, 4, 5, from Wey to Baſingſtoke; l. 18, after Lodden, add—The proprietors are prohibited from touching the Lodden, or any of the ſprings or ſtreams that feed it.

CANANDAQUA, or CANANDAIGUA, l. 11, *r.* In 1810, this townſhip had 415 families, 206 ſenatorial electors, and 2392 inhabitants.

CANDARINE, a money of account in China, where 1 tale is = 10 marcs = 100 candarines = 1000 caſh.

CANDLES, *Laws relating to*, col. 2, l. 2, add—By 49 Geo. III. c. 98. duties of cuſtoms are likewiſe impoſed; l. 8, *r.* c. 9.

CANDY, a weight in the Eaſt Indies. At Madras the candy is 500 lbs. avoirdupois, = 20 maunds. See MAUND.

CANFIELD, in *Geography*, a townſhip of Trumbull county, in Ohio, having 494 inhabitants.

CANHADA, a liquid meaſure in Portugal, 6 canhadas being = 1 pote, *r.* See ALMUDA.

CANICULAR YEAR, c. 2, l. 16, for in *r.* on.

CANNA, or CANNE, a meaſure for cloth in Italy, and the ſouth of France, Spain, &c. each canna at Barcelona being = 61.4 Engliſh inches; at Florence, = 93.1 Engliſh inches for woollen and 91.7 for ſilk; at Genoa, = 116.7 Engliſh inches; at Majorca, 67.5; at Malta, 81.9; at Marſeilles, 79; at Montpellier, 79.8; at Morocco, 20.1; at Naples, 83; at Palermo, 76.2; at Saragoſſa, 81.5; at Toulouſe, 71.7.

CANNAUGHQUANESING, in *Geography*, a townſhip of Butler county, in Pennſylvania, having 1284 inhabitants.

CANO, l. 3, *r.* 1601; l. 7, after Sevilie, and under Juan Martinez Montanes; l. 26, inſert—In 1643 he removed to Toledo; and upon, &c.

CANTERBURY. This city, by the return of 1811, contained 2093 houſes, and 10,200 inhabitants; *viz.* 4605 males, and 5595 females: 508 families being employed in agriculture, and 1194 in trade and manufactures.

CANTERBURY, a townſhip of America, &c. l. 5, for 1038 *r.* 1526, including 7 ſlaves; l. 8, add—It contains 1812 inhabitants.

CANTHARIDIN, in *Chemiſtry*, a name given by Dr. Thomſon to a peculiar principle extracted from cantharides in the following manner.

Boil cantharides in water till every thing ſoluble in that liquid be taken up. Concentrate the ſolution by evaporation, and when reduced to a thick ſyrup, boil it repeatedly in alcohol, till that fluid ceaſes to act upon it. Evaporate the alcoholic ſolution to dryneſs, and digeſt the dry reſidue in ſulphuric ether. When the ether has aſſumed a yellow colour decant it, and expoſe it in an open veſſel to ſpontaneous evaporation. Small cryſtalline plates mixed with yellow matter will ſoon ſeparate. The yellow matter may be ſeparated by alcohol, which leaves the cryſtals of cantharidin quite pure.

Cantharidin thus obtained exiſts in the form of ſhining micaceous plates. It is inſoluble in water, and in cold alcohol. Boiling alcohol diſſolves it, but the cantharidin again ſeparates on the cooling of the alcohol. Ether diſſolves it, but not in large quantities. It readily diſſolves in oils, and when applied to the ſkin, acts as a veſicatory with great energy. The ſolution of it in oils is equally efficacious. This principle ſeems to have been firſt ſeparated by Thouvenel. See CANTHARIDES.

CANTHARIS, l. *ult. dele* which ſee reſpectively.

One of the moſt elegant inſects of this genus is the ſcarlet cantharis; entirely of a vivid red, except the body, legs, and antennæ, which are coal-black. It is ſomewhat more than half an inch in length. The C. bipuſtulata is a beautiful inſect, ſomewhat ſmaller than the preceding, of a very dark but elegant gilded green, with the tips of the wingſhells red, and on each ſide of the thorax a triple veſicle of a bright red colour, capable of extenſion or retraction at the inſect's pleaſure, and by the microſcope exhibiting an alternate inflation and contraction, like that of the lungs in the larger animals. This ſpecies is found in the middle of ſummer on various plants, and particularly on nettles. Shaw.

CANTICLES, col. 3, l. 16, *r.*—The cauſes of the apparent, &c.

CANTON, in America, add—and containing 1353 inhabitants.—Alſo, a town of Hartford county, in Connecticut, having 1374 inhabitants.—Alſo, a townſhip of Luzerne county, in Pennſylvania, having 417 inhabitants.—Alſo, a townſhip of Waſhington county, in the ſame ſtate, containing 1345 inhabitants.—Alſo, a town of Stark county, in Ohio, having 846 inhabitants.

CANTON, in China, l. 17, after houſes, inſert—built of brick. Col. 2, l. 1, add—Theſe *ſampanes*, as they are called, accommodate, at the very loweſt computation, 40,000 people: l. 13, after 40,000, add—The accounts of the population of Canton are very various and contradictory. The exaggerated ſtatement above given is that of Le Comte. Du Halde eſtimates it at a million; and Sonnerat, erring in the other extreme, reduces the number to 75,000. But according to data, collected by captain King, in "Cook's Third Voyage," (vol. iii.) he apprehends, that the city and ſuburbs may probably contain about 150,000.

CAOUTCHOUC, in *Chemiſtry*. In addition to what has been ſaid of this ſingular ſubſtance, we may obſerve that it has been lately ſtated to exiſt in a great variety of plants, though it has been hitherto uſually confounded with other ſubſtances. It may be ſeparated from reſins by means of alcohol. It may be extracted from the different ſpecies of miſletoe by water, with which it readily combines, whilſt in that fluid ſtate in which it exiſts in theſe plants. When mixed with gum or extractive, it may be ſeparated by digeſting a part of the plant containing it, firſt in water, and then in alcohol, till all the ſubſtances ſoluble in theſe liquids be extracted. The reſiduum is then to be dried and digeſted in four times its weight of rectified petroleum. Expreſs the liquid part by ſqueezing the ſubſtance in a linen cloth. The liquid is then to be put by for ſome days to ſettle, and after the clear part has been poured off, the remainder is to be mixed with a third part of water, and diſtilled. The caoutchouc remains behind.

According to Bucholz, a conſiderable proportion of caoutchouc exiſts in opium. Maſtic alſo is ſtated to contain a ſubſtance very ſimilar to caoutchouc.

CAPELAT, or CAPELLAT, a name ſometimes given by farriers to a ſwelling of a wenny kind, which grows on the hock of a horſe, and on the point of its elbow. It often ariſes from bruiſes, and in this caſe ſhould be bathed with hot vinegar and alum; but when they grow gradually on both heels and elbow, blood is extravaſated. When this happens, ſuppuration ſhould be promoted by rubbing the part with ſtimulating unguents; and when matter is formed, the ſkin ſhould be opened with a lancet, in more dependent parts

parts towards one fide, for avoiding a fcar. The fubfequent dreffings may be turpentine, honey, and tincture of myrrh.

CAPEMAY, in *Geography*, a county of New Jerfey, containing 3632 inhabitants, of whom 81 are flaves.

CARAGE *of Lime*, denotes the quantity of fixty-four bufhels.

CARALLIA, in *Botany*, *Carallie* of the Telingas, or natives of Hindooftan; being one of thofe barbarous names which fome modern botanifts have ventured to tolerate, but which no claffical one can approve.—Roxb. Coromand. v. 3. 8.—Clafs and order, *Icofandria Monogynia*. Nat. Ord. *Hefperideæ*, Linn. *Myrti*, Juff.

Eff. Ch. Calyx in fix or feven fegments, fuperior. Petals fix or feven. Stigma three-lobed. Berry of one cell, with a folitary feed.

1. C. *lucida*. Shining Carallia. Roxb. as above, t. 211. —Native of the lower region of the Circar mountains. A fmall, handfome, evergreen tree, flowering in March and April. *Leaves* on fhort ftalks, oppofite, elliptical, acute, finely ferrated, fmooth, four or five inches long, and two or two and a half broad. *Flowers* fmall, yellow, in little, aggregate, axillary, ftalked heads. *Berry* the fize of a pea, reddifh. *Seed* large, with a ftrongly curved embryo. Nothing is recorded of the qualities or ufes of this plant. It is evidently next akin to EUGENIA; fee that article.

CARAWAY, *r.* CARUM, &c.; at the end of the next article *r.* CARUM.

CARBON, in *Chemiftry*. The progrefs of chemical knowledge enables us to ftate, with greater accuracy and precifion, the nature of fome of the compounds of carbon, than at the period when this article in the Cyclopædia was written.

Carbonic Oxyd.—It has been fhewn by Gay Luffac, that 100 meafures of this gas require for complete combuftion 50 meafures of oxygen, and that the product is 100 meafures of carbonic acid; hence it muft be compofed of one atom of carbon and one atom of oxygen, or 100 parts by weight will confift of

Oxygen	- - -	57.14
Carbon	- - -	42.86
		100.00

And its true fpecific gravity muft be .9722, and 100 cubic inches of it muft weigh, at a mean temperature and preffure, 29.652 grains. Carbonic oxyd has the property of combining with chlorine, and forming a peculiar compound, which its difcoverer, Dr. Davy, has named PHOSGENE *gas*; which fee.

Carbonic Acid.—When pure charcoal is burnt in oxygen gas, it has been fhewn that the original bulk of the oxygen fuffers no change. Hence it is obvious, that, by fubtracting the fpecific gravity of oxygen from that of carbonic acid gas, we fhall obtain the quantity of carbon exifting in it. The fpecific gravity of oxygen gas is 1.11, and that of carbonic acid 1.52. Hence 100 parts, by weight, of carbonic acid will confift of

Oxygen	- - -	72.73
Carbon	- - -	27.27
		100.00

which correfpond with two atoms of oxygen and one of carbon. See ATOMIC *Theory*.

Carburetted Hydrogen.—The fpecific gravity of carburetted hydrogen, according to Dr. Thomfon, is .5555, and 100 cubic inches of it weigh 16.99 grains. It requires for its complete combuftion twice its volume of oxygen gas, and produces exactly its own volume of carbonic acid; the only remaining product is water. Hence 100 parts, by weight, of this gas are compofed of

Carbon	- - - -	75
Hydrogen	- - -	25
		100

which correfpond with one atom of carbon and two of hydrogen.

Olefiant Gas.—The fpecific gravity of this gas, according to Dr. Thomfon's experiments, is .974, and 100 cubic inches of it weigh 29.72 grs. It requires for its complete combuftion three times its volume of oxygen gas, and produces, when burnt, twice its volume of carbonic acid gas, and a certain proportion of water. Hence 100 parts, by weight, of this gas are compofed of

Carbon	- - -	85.71
Hydrogen	- - -	14.29
		100.00

which correfpond with one atom of carbon and one of hydrogen.

The curious oil-like compound formed by the union of this gas with chlorine, has been lately examined by MM. Robiquet and Colin. They found that it is compofed of one volume of chlorine united with one volume of olefiant gas, and of courfe that its conftituents, by weight, are

Olefiant gas	- -	16.28
Chlorine	- - -	83.72
		100.00

This oily liquid, which Dr. Thomfon confiders as a fort of *ether*, and hence names it *chloric ether*, burns with a green flame, and at the fame time gives out copious fumes of muriatic acid and much foot. Its fpecific gravity at 45° is 1.2201, water being 1.000. It boils at 152°. At the temperature of 49°, its vapour is capable of fupporting a column of mercury 24.66 inches in height. The fpecific gravity of this vapour was found by experiment to be 3.4434, which very nearly coincides with the above account of its compofition. When paffed through a red-hot porcelain tube it is decompofed and converted into muriatic acid, and an inflammable gas containing hydrogen and carbon, while a copious depofit of charcoal is found in the tube. It is alfo decompofed when paffed through red-hot oxyd of copper.

With refpect to the *carbonates*, the numbers reprefenting them will of courfe require a little adjuftment; this can be eafily done from the compofition of carbonic acid ftated above, and from the data given under ATOMIC *Theory*.

CARBONIC *Acid Gas*, col. 2, l. 5, add—According to the accurate experiments of Meffrs. Allen and Pepys, recorded in the Phil. Tranf. the weight of a cubic inch of this gas is .464 of a grain. Col. 3, l. 46, *r.* milkinefs.

CARDAMOM, l. 2, infert after *Cardamom*, *anguftifolium*, *grana Paradifa*, &c.

CARDIFF, col. 2, l. 9, infert after *canal*—The townhall of Cardiff is a refpectabl. modern building, and near it is the county gaol, built upon Mr. Howard's plan; l. 14— By the parliamentary return in 1811, the number of inhabitants is ſtated at 2457. The only manufactory eſtabliſhed here is that of iron hoops: the trade, however, is very conſiderable, in conſequence of the numerous collieries up the vale, and the iron and tin works of Merthyr, Melin Gruffydd, &c. the produce of which is conveyed here by the canal for exportation, and which creates a large import trade from Briſtol, &c., in ſhop goods to ſupply the conſumption of the interior country. There are regular paſſage-boats twice a week from this place to Briſtol.

Cardiff is a borough-town, and in conjunction with the contributary boroughs of Cowbridge, Llantriſſant, Keaſig, Aberavon, Neath, Swanſea, and Loughor, ſends one member to parliament.

CAREX, col. 4, l. 11, *r. banata.*

CAREYA, in *Botany*, named by Dr. Roxburgh, "after its diſcoverer Mr. William Carey, a good botaniſt, and a promoter of natural hiſtory in general."—Roxb. Coromand. v. 3. 13. Ait. Hort. Kew. v. 4. 236.—Claſs and order, *Monadelphia Polyandria.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Eſſ. Ch. Calyx ſuperior, four-cleft. Petals four. Style one. Germen of four cells. Berry with numerous ſeeds, imbedded in pulp.

1. C. *herbacea.* Herbaceous Careya. Roxb. as above, t. 217. Ait. n. 1.—Herbaceous. Flowers ſtalked. Outer filaments longeſt and without anthers.—Native of Rungpore, in Bengal, flowering in February. *Root* woody, perennial. *Stems* a ſpan high, annual, round, ſmooth. *Leaves* oppoſite, obovate, crenate, ſmooth, from four to eight inches long, on ſhort ſtalks. *Flowers* terminal, corymboſe, few, large and very beautiful, the *calyx* and *petals* greeniſh, tinged with red; the outer row of their innumerable *ſtamens* crimſon, capillary, two inches long, recurved, without *anthers*, about twice the length of the obovate *petals*. *Berry* brown, the ſize and texture of a medlar.

2. C. *arborea.* Tree Careya. Roxb. as above, 14. (Pelou; Rheede Hort. Malab. v. 3. 35. t. 36.)—Arboreous. Flowers ſeſſile. Inner filaments ſhorteſt, and without anthers.—Native of the valleys, in various mountainous parts of India. A large *tree*, with obovate, ſlightly ſerrated, ſmooth, deciduous *leaves*, from ſix to twelve inches long. *Flowers* crowded, pale yellow, appearing with the young leaves in March. *Fruit* the ſize of a ſmall orange, fetid and nauſeous till quite ripe, when the pulp becomes ſweetiſh, but Rheede reports it to be poiſonous, which, conſidering its affinity to *Pſidium*, is not credible. Dr. Roxburgh gives no account of this matter, but deſcribes the *wood* as the colour of mahogany, though leſs hard and cloſe. The fibrous *bark* makes tough and durable ropes.

CARGA, a meaſure for wine and oil at Barcelona, equal to 2½ quarteras.

CARGADOR, in Portugal and Holland, denotes a ſhip-broker.

CARGILIA, in *Botany*, is dedicated to the memory of Dr. James Cargill of Aberdeen, a contemporary of Caſpar Bauhin, in whoſe *Prodromus*, p. 154, 155, (Mr. Brown by miſtake refers to his *Theatrum*,) ſeveral deſcriptions of *Fuci*, communicated by Dr. Cargill in 1603, may be ſeen.—Brown Prodr. Nov. Holl. v. 1. 526.—Claſs and order, *Polygamia Dioecia?* rather *Octandria Monogynia.* Nat. Ord. *Ebenaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx inferior, half-fourcleft. Limb of the corolla four-cleft. Stamens inſerted into the baſe of the corolla; filaments doubled. Germen of four cells, with two ſeeds in each. Berry globoſe, cloſely inveſted with the cup-ſhaped calyx.—Some flowers have fewer, and imperfect, ſtamens; others only the rudiment of a piſtil.

This genus is intermediate between DIOSPYROS and MABA. See thoſe articles.

1. C. *laxa.*—Leaves oblong, rather wavy, ſmooth. Calyx of the male flowers four-toothed, half as long as the tube of the corolla. Style in three or four deep ſegments. Young branches lax.—Found by Mr. Brown in the tropical part of New Holland.

2. C. *auſtralis.*—Leaves oblong, ſmooth, obtuſe, paler beneath; acute at the baſe.—Calyx of the male flowers four-cleft, as long as the tube of the corolla. Style undivided. Found by Mr. Brown, in New South Wales.

CARL D'OR, a gold coin of Brunſwick, of which there are double, ſingle, and half carl d'ors; that ſince 1802 containing 92 gr. of pure gold, and equal 16*s.* 3½*d.* ſterling. The double in proportion. See COIN.

CARLIN. Add—See TARO.

CARLISLE, col. 5, l. 27, add—By the return of 1811, the city of Carliſle contained 1658 houſes, and 12,531 perſons; *viz.* 5628 males, and 6903 females: 134 families employed in agriculture, and 2301 in trade, manufactures, and handicraft.

CARLISLE, the chief town of Cumberland county, &c.;—l. 6. By the cenſus of 1810, Carliſle borough contains 2491 inhabitants, including 78 ſlaves.—Alſo, a town of Middleſex county, in Maſſachuſetts, having 672 inhabitants.

CARMELITES. Add—ſee Mancheſter Memoirs, vol. v.

CARN, or CAIRN. See CARNEDDE.

CARNESVILLE. Add—ſee FRANKLIN.

CAROLIN D'OR, or CAROLIN, a gold coin of Bavaria, Heſſe Darmſtadt, and Wurtemberg, valued at 11 florins. See COIN.

CAROLINA, *N. and S.* See UNITED STATES.

CAROLINE, l. 4, *r.* 17,544; l. 5, *r.* 10,764; l. 8, *r.* 9453; l. 10, *r.* 1520.

CARORA, l. 2, inſert—15 leagues E. of Maracaybo lake, in N. lat. 10°. The town is tolerably well built; the ſtreets are large and on a line; the air is ſalubrious, though the ſoil is parched; the inhabitants, amounting to about 6200, live on the produce of their flocks and herds, and employ themſelves in tanning and dreſſing the hides and ſkins, which are uſed in the city for boots, ſhoes, ſaddles, bridles, and curriery. The ſurplus of the local conſumption is ſpread over the province, or is conveyed to Maracaybo, Carthagena, and the iſland of Cuba. They alſo make, with a kind of fibre (*aloe diſticha*,) very good hammocks, which furniſh an article of commerce. Depons.

CARPATHIAN MOUNTAINS, l. 22, *r.* Zemnitz.

CARPHA, in *Botany*, ſo named by ſir Joſeph Banks and Dr. Solander, from κάρφος, *dry ſtraw or chaff*, in alluſion to the habit of this genus.—Brown Prodr. Nov. Holl. v. 1. 230.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Juſſ. Br.

Eſſ. Ch. Spikelet ſingle-flowered; ſcales imperfectly two-ranked, the lower ones empty. Briſtles three to ſix, beneath the germen, as long as the fertile ſcale. Style awl-ſhaped, without a joint, crowning the priſmatic nut. Stigmas two or three.

Sect. 1. *Spikelets two-ranked. Stigmas three. Nut triangular. Briſtles feathery.*

1. C. *alpina.*—Spikelets in a corymboſe cluſter. Briſtles ſix, feathered nearly to the top. Stem leafy, ſmooth. Leaves rough.—Native of Van Diemen's iſland.

2. C. *deuſta.*—Tuft terminal. Involucrum of two elongated

gated leaves; dilated and membranous at the base. Bristles three, feathery at the base. Stem leafless. Leaves radical, almost bristle-shaped.—Native of Port Jackson.

These, with a non-descript species from Terra del Fuego, constitute, in Mr. Brown's opinion, the genuine genus of *Carpha*, the following being perhaps entitled to form one by themselves.

Sect. 2. *Spikelets awl-shaped. Style elongated, in two divisions. Nut nearly cylindrical.*

3. C. *avenacea*.—Panicle somewhat spiked. Scales with awn-like points. Bristles four, slightly toothed; fringed at the base. Stem roundish, leafy.—Native of the south coast of New Holland. *Stamens* three.

4. C. *diandra*.—Panicle dense. Spikelets two-flowered. Scales with awn-like points. Stamens two. Bristles five or six, capillary, toothless; fringed at the base. Stem roundish, leafy.—Found at Port Jackson.

5. C. *clandestina*.—Spike elongated. Sheaths alternate. Spikelets in pairs, concealed. Stem round, leafy.—Found on the south coast of New Holland.

CARRICK. See Trankey.

CARTER, l. 1, insert E. Tennessee. Add—It contains 1*l.* 4*s.* 6*d.* See Tax.

CARTERET, in Carolina, &c., l. 3, *r.* 4823; l. 4, *r.* 4190 inhabitants, 202 being slaves.

CARTS, *Laws relating to*, col. 3, l. 49, for 1*l.* 4*s.* *r.* 1142.

CARTHAMUS, *Chemical Properties of.* Many experiments have been made on the colouring matter extracted from this plant. The last and most interesting are those of Dufour and Marchais, of which we shall present our readers with a short account.

The flowers of the carthamus contain two colouring matters; a yellow, which is soluble in water, and has hitherto been applied to no use; and a red, which is employed by the dyers, &c., and which constitutes the pigment called *rouge*. The yellow colouring matter readily dissolves in water, but it is difficult to separate the whole of it. Dufour effected this by exposing the carthamus wrapt up in a piece of linen to the action of a stream of water. To separate the red colouring matter, he macerated for an hour the carthamus, after it had been thus washed, in a weak solution of carbonate of soda. Into this solution was put a quantity of cotton, and lemon-juice was then dropped into it till the liquid assumed a fine cherry-red colour. After standing twenty-four hours, the liquid lost its red colour, the whole colouring matter having combined with the cotton, and dyed it red. The cotton was taken out and well washed, to separate a little of the yellow colour adhering to it. It was then put into a very dilute solution of carbonate of soda. This alkali separated the colouring matter from the cotton, dissolved it, and assumed a yellow colour; the cotton being removed and lemon-juice dropped into the solution, a fine rose-coloured powder gradually separated, and at last precipitated. This was the red colouring matter. This red colouring principle is insoluble in water and oils, but is soluble in alcohol and ether. The alkalies also dissolve it, but destroy its colour. When distilled, it yields a little water, scarcely any gas, a little oil, and a portion of charcoal, equal to one-third of the original weight. When this charcoal is burnt it leaves no ashes. One thousand parts of carthamus yielded only five of this red colouring matter, but no less than 268 of the yellow colouring matter above-mentioned. Carthamus also contains a great variety of other substances according to Dufour, many of which, such as alumina, sand, &c., are evidently foreign. It is probably in some such manner as the above that the *pink saucers* are prepared from carthamus, though we believe the exact process is kept secret.

CARTILAGE, *Chemical Properties of.* See Bone.

CARTONEMA, in *Botany*, from κάρϕος, *shorn*, and νημα, *a filament*.—Brown Prodr. Nov. Holl. v. 1. 271.—Class and order, *Hexandria Monogynia.* Nat. Ord. *Commelineæ*, Br.

Ess. Ch. Calyx three-leaved, permanent. Petals three, smaller. Filaments equal, permanent, beardless, partly roughish. Anthers oblong, vertical. Style permanent Stigma bearded. Capsule shorter than the calyx, of three cells and three valves, with central partitions. Seeds one or two, with a dorsal embryo.

1. C. *spicatum*.—Found by Mr. Brown in the tropical part of New Holland. *Root* perennial, tuberous below the fibres. *Herb* clothed with lax hairs, much resembling Philydrum in appearance. *Stem* leafy, simple, or slightly branched. *Leaves* linear, clasping, elongated. *Spike* terminal, of many yellow *flowers*, each with two unequal, leafy, permanent *bracteas*. The habit, as well as the permanent *stamens* and *style*, lead Mr. Brown to suspect some affinity to *Philydrum*. Hence perhaps the true place of that puzzling genus may be discovered.

CARVER, in *Geography*. Add—It contains 358 inhabitants.

CASBIN, insert—or Casween, l. 11, after broad, add—it may still, however, be regarded as one of the largest and most populous towns in the kingdom, and carries on a great trade with Ghilan.

CASEY, a county of Kentucky, containing 3252 inhabitants, of whom 237 are slaves.

CASH, a small coin in China, and India beyond the Ganges. See Tale.

CASHIERING, in *Military Language.* An officer sentenced by a general court-martial, or peremptorily ordered by the king, to be dismissed from the service, is said to be *cashiered*.

CASSAVA, or Tapioca, *Chemical Properties of.* This is prepared from the roots of the Jatropha *manihot*, an American plant. (See Jatropha.) These are peeled and subjected to pressure in a bag made of rushes. The expressed juice is a virulent poison, and is employed by the Indians for poisoning their arrows; but it deposits gradually a white powder, which has all the properties of starch, and which, when washed and dried, is perfectly harmless, and highly nutritive. What remains in the bag also consists chiefly of the same starch. It is dried in smoke, and afterwards pressed through a kind of sieve. Of this substance, the *cassava bread*, so much employed in the West Indies, is made.

CASSINIA, in *Botany*, dedicated by Mr. Brown to his learned fellow-labourer in the study of compound flowers, M. Henry Cassini, two of whose Memoirs on their stamens and style have appeared in the French Journal de Physique, for 1813 and 1814.—Br. in Ait. Hort. Kew. v. 5. 185.—Class and order, *Syngenesia Polygamia-segregatæ.* Nat. Ord. *Compositæ*, Linn. Br.

Ess. Ch. Partial calyx four-leaved, two-flowered. Florets all perfect. Seed-down chaffy, tufted. Partial receptacle naked.

1. C. *aurea.* Yellow Cassinia.—Native of the south coast of New Holland. *Br.* Seeds were sent to Kew, by Mr. Good, in 1803. The plant is marked as a green-house perennial herb, flowering in July and August, but we have no account of its habit or appearance.

CAST, for Brahmins *r.* Brachmans.

CASTELLANO, a weight for gold in Spain, 50 castellanos

lanos being = 400 tomines or 4800 grains. Silver is weighed by the same mark of 50 caftellanos, divided into 8 ounces, 64 ochavos, 128 adarnnes, 384 tomines, or 4608 grains.

CASTINE. Add—It contains 1036 inhabitants.

CASTLE, New. See Newcastle.

CASTLE-CARY, l. 8, add—By the returns of 1811, the parifh contained 281 houfes, and 1406 inhabitants; 650 being males, and 756 females.

CASTLE-RISING. By the returns of 1811, the borough and parifh contained 48 houfes, and 297 perfons; *viz.* 148 males, and 149 females.

CASTLETON, l. 9, *r.* 1420.

CASTLE-TOWN, a townfhip of America, &c. l. 2, which contained, by the cenfus in 1810, 1301 inhabitants, and 121 fenatorial electors. Here are three houfes for public worfhip, and fome fchool-houfes.

CASTOR. By the returns of 1811, the parifh contained 185 houfes, and 1051 perfons; 487 being males, and 564 females.

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CASWELL, l. 3, *r.* 11,757 and 4299.

CATAHULA, a parifh of the territory of Orleans, having 1164 inhabitants.

CATALPA, in *Botany*, a well-founding barbarous name, which Linnæus in Hort. Cliff. 317, could trace no further than the gardeners of that day, nor are we acquainted with its origin or meaning.—Juff. Gen. 138. Dryand. in Ait. Hort. Kew. v. 1. 24. Purfh 10.—Clafs and order, *Diandria Monogynia*. Nat. Ord. *Perfonatæ*, Linn. *Bignoniæ*, Juff.

Eff. Ch. Corolla five-cleft, irregular. Calyx in two deep fegments. Three barren ftamens. Capfule of two cells. Seeds with a membranous jagged wing at each end.

1. C. *fyringifolia*. Common Catalpa. Sims in Curt. Mag. t. 1094; and

2. C. *longiffima*. Wave-leaved Catalpa. (Bignonia longiffima; Willd. Sp. Pl. v. 2. 290.) are the two defcribed fpecies. (See Bignonia n. 1 and n. 22.) We have heard that Dr. Solander, who was firft aware of this genus, and who would certainly never have admitted fo unauthorifed a name as *Catalpa*, was very defirous of having it called *Solandra*.

CATAWESSY. Add—It contains 1934 inhabitants.

CATHARINE II., col. 3, l. 40, for Perfian *r.* Pruffian.

CAT'S-EYE. See Mineralogy, *Addenda*.

CATTY, a weight at Canton, in China, and in fome parts of India. The catty or gin of 16 lyangs or tales weighs 19 oz. 6 dwts. 4 grs. Englifh troy, fo that 10 tales would weigh 5792 Englifh grains. See Tale.

CAVALLO, Tiberius, F.R.S., in *Biography*, the fon of an eminent phyfician of Naples, where he was born in 1759. Deftined for commerce, he came to England for the purpofe of acquainting himfelf with the principles of commerce in 1771; but literature and philofophy diverted his deftination and enjoyed his preference. To thofe who were engaged in purfuits fimilar to his own, and to the editor of this Cyclopædia, he was a very ufeful coadjutor. His publications on a variety of philofophical fubjects, and his communications to the Royal Society, were numerous, and are well known; particularly his "Elements of Natural and Experimental Philofophy," 1803, 4 vols. 8vo. He died, much refpected and efteemed, and with the editor's fincere regret, in London in 1810.

CAUCUS, a term ufed in North America for a kind of electioneering committee; *caucufing*, as it is faid, denoting electioneering. Of the origin of this uncouth term we have the following account in Gordon's Hift. of the Amer. Rev. London 1788. "About the year 1738, the father of Samuel Adams, and twenty others who lived in the north or fhipping part of Bofton, ufed to meet to make a *caucus*, and lay their plan for introducing certain perfons into places of truft. Each diftributed the ballots in his own circle, and they generally carried the election. As this practice originated in the fhipping part of Bofton, caucus might have probably been a corruption of Caulker's meeting." See Pickering's American Vocabulary.

CAVEDONA, l. *ult.* *r.* 80.

CAVEER, or Cabeer, a money of account at Mocha, in Arabia, where accounts are kept in piaftres of 80 caveers current.

CAVELLO, a copper coin of Naples.

CAVENDISH, *The Honourable* Henry, in *Biography*, was the fon of lord Charles Cavendifh, and born in London in 1731. In literature, mathematics, chemiftry, and philofophy, he was eminently diftinguifhed; but his temper and habits were through life fingularly reclufe and economical; fo that he appeared to thofe who were not honoured with being his intimate affociates to great difadvantage. In early life his fortune was fmall; but by the retired manner in which he lived, and by fubfequent accumulation of property, he died very rich. His library was very valuable; and eafy of accefs to all his literary friends; but it is to be lamented that, in other refpects, he was not emulous of following the example and acquiring the reputation of his *eminent* friend, fir Jofeph Banks, the prefident of the Royal Society, whofe Sunday evening meetings he conftantly attended, being generally there as well as at the meetings of the Royal Society, where he was almoft always prefent, more ready to hear than to fpeak. A fimilar referve and taciturnity marked his character in all his ordinary focial connections and fecular concerns. As a philofopher, his ruling temper was not without its beneficial effects. His contributions to the Royal Society, and which may be found in its Tranfactions, relate to chemiftry, electricity, meteorology, and aftronomy. This eminent philofopher died on February 4th, 1810, in the 79th year of his age; and at that time was reckoned the greateft proprietor in the Bank of England, his wealth being eftimated at nearly 1,300,000 pounds, which he left entirely among his relations.

Cavendish, in *Geography*, a town of Windfor county, in Vermont, having 1295 inhabitants.

CAUK, l. *ult.* add—and Barytes.

CAULINIA, in *Botany*, fo named by De Candolle, in honour of Don Philip Cavolini, an able Neapolitan naturalift, who has illuftrated the principal fpecies.—"De Cand. Fr. v. 3. 156." Brown Prodr. Nov. Holl. v. 1. 339. (Poffidonia; Konig in Ann. of Bot. v. 2. 95. Kernera; Willd. Sp. Pl. v. 4. 947.)—Clafs and order, *Triandria Monogynia*. Nat. Ord. *Aroideæ*, Br.

Eff. Ch. Calyx and Corolla wanting. Filaments dilated, permanent, membranous, bearing the two-lobed anthers externally at the bafe. Germen fuperior, fingle-feeded. Stigma nearly feffile. Pericarp flefhy.

This genus is founded on *Zoftera oceanica* of Linnæus, fee Cavol. Monogr. tranflated in Ann. of Bot. v. 2. 77. t. 6. To this Mr. Brown adds a New Holland fpecies, *C. ferrulata*, with three doubtful ones, among which is *Ruppia antarctica*, Labill. Nov. Holl. v. 2. 116. t. 264. We are not informed why this genus fuperfedes the Cavolinia we have already defcribed; fee that article.

CAULOPHYLLUM, Michaux Bor.-Amer. v. 1. 204. Purſh 218. See LEONTICE.

CAUSTIC, LUNAR, l. 18, *r.* revived.

CAUSTIS, in *Botany*, καυςις, *ſcorched hay or corn*, alluding to the dry ſheaths of the ſtem, which appear as if burnt.—Brown Prodr. Nov. Holl. v. 1. 239.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Juſſ. Br.

Eſſ. Ch. Spikelets nearly ſingle-flowered. Scales faſciculated, the empty ones numerous. No briſtles beneath the germen. Style dilated at the baſe. Stigmas three or four. Nut tumid, crowned with the bulbous baſe of the ſtyle.

Obſ. One ſpecies has five *ſtamens*, a circumſtance marked by Mr. Brown as very extraordinary.

Theſe are rigid ruſhy plants, growing on dry heaths in New Holland. Their *ſtems* are leafleſs; round and undivided in the lower part; panicled and ſemi-cylindrical above; the ultimate branches awl-ſhaped and leaf-like. The *ſtems* are clothed with entire withered ſheaths, extended on one ſide into an awl-ſhaped point, of the ſame colour. *Spikelets* panicled, ſmall, ſometimes dioecious. *Nut* ovate, white, opaque. *Brown.*

1. C. *flexuoſa.*—Panicles looſe, zigzag; their ultimate branches ſmooth. Scales of the ſpikelets ſmooth.—Found at Port Jackſon.

2. C. *dioica.*—Panicles zigzag, rather denſe; ultimate branches rough-edged. Scales of the ſpikelets downy.—Native of the ſouth coaſt of New Holland.

3. C. *pentandra.*—Principal and partial branches ſtiff. Stamens five.—Found near Port Jackſon.

CAWZI, or CAZI, denotes in India a Mahometan judge or juſtice, who alſo officiates as a public notary by affixing his ſeal. This is the ſame with the officer named Cadi in Turkey.

CAYUGA, in *Geography*, a county of New York, containing 29,843 inhabitants, of whom 75 are ſlaves.

CECIL, l. 3, add—in 1810, 13,066 inhabitants, of whom 2469 are ſlaves. Add at the cloſe—containing 1167 inhabitants.

CEDAR CREEK, a hundred of Suſſex county, in Delaware, having 3874 inhabitants, of whom 310 are ſlaves.

CELEMINE, a corn meaſure in Spain. See CAFFISE.

CELESTINE *Sulphate of Strontian.* See STRONTIAN.

CELSIUS, ANDREW, in *Biography*, an eminent Swediſh aſtronomer, was born at Upſal in 1701, and diſtinguiſhed by his knowledge of mathematics, and more eſpecially of aſtronomy, to which his attention was principally devoted. In 1730 he was appointed by the king profeſſor of aſtronomy, and he contributed very much to the revival of the ſtudy of this ſcience in his native country, where it had been much neglected. With this view, he travelled into foreign countries, viſiting Germany in 1732, and Italy in 1733. From Bologna he went to Rome; and having an opportunity of meaſuring the power of light, he concluded from his experiments on this ſubject, that the light of the moon, at new moon, is eight times weaker than at full moon: and that the light of the ſun is 320,000 times ſtronger than that of the moon; and when in the meridian, thirty times more powerful than in the horizon. From Rome he removed to Paris in 1734, and was there engaged to accompany Maupertuis and other eminent aſtronomers, who were appointed to meaſure a degree under the polar circle; a problem of great importance in determining the figure of the earth. To the ſucceſs of this miſſion he very much contributed by his journey to London in 1736, in order to procure inſtruments of Graham's conſtruction, and here he had the ſatisfaction of being introduced to ſeveral ſcientific perſons. On his return from this miſſion, he was recompenſed for his ſervices by a penſion of 1000 livres, granted to him by the French government, as well as the quadrants which had been uſed at Tornea. In 1737 he returned to his own country, where he erected, in his own garden, a turret for the purpoſe of making obſervations; but in 1739, in conſequence of a diſſertation publiſhed at Upſal on the importance and utility of ſuch obſervations, a large public obſervatory was immediately begun and completed in the following year. Thus furniſhed with the means of making his obſervations, he was indefatigable in the uſe of them, and in the correction of tables which had been before conſtructed. But on his obſervations of various kinds, and their practical reſult, our limits will not allow us to enlarge. His fame was daily increaſing, ſo that he was a member of the Imperial Academy of the Searchers into Nature, of the Academy of Berlin, of the Royal Society of London, and of the Inſtitute of Bologna. He was alſo ſecretary to the Society of Upſal, and to the Academy of Sciences at Stockholm. His ſeparate works, as well as his communications to learned ſocieties, were numerous; but his life and labours were terminated by a conſumption, in the 43d year of his age, in April 1744. Gen. Biog. Appendix.

CEMENT. Mr. Parkes, in his "Eſſays," (vol. i. p. 320.) recommends the following fire-cake, as that which he employs, becauſe he has not been able to diſcover a better; *viz.* good clay two parts, ſharp waſhed ſand eight parts, and horſe-dung one part. Theſe materials, being intimately mixed and beaten up with a little water, and the whole afterwards thoroughly tempered like mortar, by treading it for a conſiderable time with the feet. Mr. Watt's fire-cake, which is a good one, is formed by pounding porcelain clay from Cornwall, and mixing it to the conſiſtence of thick paint, with a ſolution of borax, in the proportion of two ounces of borax to a pint of hot water.

CENARRHENES, in *Botany*, from κενος, *empty*, and αῤῥην, *a male*, ſo named by M. Labillardiere, who took the nectariferous glands for alternate abortive ſtamens.—Labill. Nov. Holl. v. 1. 36. Brown Prodr. Nov. Holl. v. 1. 371. Tr. of Linn. Soc. v. 10. 158.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juſſ. Br.

Eſſ. Ch. Petals four, regular, tapering, deciduous. Stamens inſerted into the baſe of each petal. Nectariferous glands four, at the baſe of the germen, ſtalked. Germen ſeſſile. Stigma ſimple. Drupa with a ſingle nut.

1. C. *nitida.* Labill. t. 50.—Native of the ſouthern part of Van Diemen's iſland. A ſmooth tree. *Leaves* alternate, ſtalked, obovate-oblong, ſhining, diſtantly ſerrated, three or four inches in length. *Spikes* much ſhorter, axillary, ſolitary, ſimple. *Flowers* alternate, quite ſeſſile, with a ſmall, broad, acute *bractea* to each.

Mr. Brown has, in our opinion, moſt happily determined the natural order of this genus, which is nearly allied to PERSONIA (ſee that article); and his excellent remarks in the Linnæan Tranſactions, too long for inſertion here.

CENIS, col. 2, l. 19, after plain, inſert—about ſix miles long, covered with verdure; l. 46, add—From the higheſt of theſe mountains, Hannibal ſhewed his ſoldiers the fine country they were going to conquer. The higheſt point of Mount Cenis is 9261 feet at the grand croſs, on the ſide of Italy 6022 feet.

CENOMYCE, in *Botany*, from κενος, *empty*, and μυκη, *a ſort of fungus*, alluding to the hollowneſs of the little fungus-like receptacles.—Achar. Syn. 248. "Lichenogr. 105.

105. t. 11. f. 3—6."—Clafs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eff. Ch. Frond leafy, cartilaginous, lobed. Receptacles orbicular, coloured, inflated, without a border, on hollow tubular ftalks.

This genus contains the *Lichenes pyxidati* of Linnæus, and embraces the Bæomyces of Perfoon, and of Acharius in his earlier works; but the latter name now defignates another genus, which the reader will find in the prefent volume. Acharius has forty-two fpecies of *Cenomyce*. Examples of the genus may be feen in Engl. Bot. t. 907. 1393, 1894, 2051, &c.

CENTER *of Rotation*, col. 6, l. 35, *r. p* × *p* C; l. 63, *r. p* C.

Center, in *Geography*, a townfhip of Columbiana, in Ohio, having 1103 inhabitants.

CENTRANTHERA, in *Botany*, from κεντρον, *a fpur*, and ανθηρα, *an anther*.—Brown Prodr. Nov. Holl. v. 1. 438.—Clafs and order, *Didynamia Angiofpermia*. Nat. Ord. *Perfonatæ*, Linn. *Scrophularinæ*, Br.

Eff. Ch. Calyx fplit at one fide; its five fegments cohering at the other. Corolla funnel-fhaped; limb fpreading, five-lobed, unequal. Stamens within the tube. Lobes of the anthers fpurred at the bafe. Stigma lanceolate. Capfule with two cells, two valves, and a contrary partition bearing the receptacle of the feeds, at length feparating from the valves.

1. C. *hifpida*. Br. n. 1.—Found by fir Jofeph Banks, in the tropical part of New Holland. An upright briftly *herb*, with oppofite, undivided, narrow *leaves*, and a terminal fpike. *Flowers* purplifh, alternate, nearly upright, each with three *bracteas*. *Capfule* ovate, rather pointed, its valves fometimes divided. *Seeds* minute, with a lax reticulated fkin. *Albumen* but fmall. *Embryo* round. *Calyx* at length feparable into two divifions. Akin on the one hand to *Buchnera* and *Euphraria*, on the other perhaps to *Digitalis*, being alfo allied to *Sefamum*, but diftinguifhed by the ftructure of the *capfule*, and the prefence of *albumen*. The *ftigma* requires further examination. Mr. Brown thinks there is another fpecies found in the Eaft Indies.

CENTRE, in *Geography*, a county of Pennfylvania, containing 10,681 inhabitants.—Alfo, a townfhip of Butler county, in Pennfylvania, containing 742 inhabitants.

Centre-*Harbor*, a town of Strafford county, in New Hampfhire, containing 349 inhabitants.

CENTROLEPIS, in *Botany*, Labill. Nov. Holl. v. 1. 7. See Devauxia.

CEPHALOTUS, κεφαλωτος, *capitate*, expreffive of the glandular head of each of the ftamens.—Labill. Nov. Holl. v. 1. 6. Brown Bot. of Terra Auftr. 68.—Clafs and order, *Dodecandria Hexagynia*. Nat. Ord. *Rofaceæ*, Juff. Br.

Eff. Ch. Calyx in fix fegments, coloured. Petals none. Stamens inferted into the rim of the calyx. Anthers glandular at the back. Germens fingle-feeded. Styles vertical.

1. C. *follicularis*. New Holland Pitcher-plant. Labill. as above, 7. t. 145. Br. t. 4.—In marfhy ground, near King George's found and Princefs Royal harbour, on the fouth-weft coaft of New Holland, flowering in December and January. *Herb* perennial, with fcarcely any *ftem*. *Leaves* at the top of each divifion of the crown of the *root*, numerous, crowded, ftalked, elliptic-lanceolate, acute, entire, fmooth, or flightly hairy, an inch and a half long, intermixed with numerous, ftalked, deflexed, inflated, pitcher-like *veffels*, larger than the leaves; double-winged, and fringed, at the front and fides; tumid and crenate at the margin; more or lefs clofed by a convex ribbed lid. Each is half full of a fweetifh watery fluid, in which ants are generally found drowned, as in Nepenthes (fee that article); but thefe remarkable plants have no other character in common. *Flower-ftalks* central, folitary, nearly round, hairy, leaflefs, twelve or eighteen inches high, each terminating in a denfe, compound, obtufe *clufter*, of fmall white *flowers*. The *fruit* is unknown.

CEPHALUS, a genus of the cartilaginous order of fifhes, the fpecies of which have been united with thofe of the genera of *Diodon* and *Tetrodon*; which fee. Dr. Shaw has given the following character of this genus: jaws bony; body terminating abruptly, fo as to refemble the head of a fifh. The fpecies enumerated by Shaw are, *C. brevis*, or tetrodon mola of Linnæus; *C. oblongus*, or Tetrodon trunculus, or oblong diodon of Pennant; *C. varius*, with body variegated by whitifh undulations and fpots; *C. Pallafianus*, the diodon mola of Gmel. Linn.

CERASIN, in *Chemiftry*, a name given by Dr. John to a peculiar vegetable fubftance, which has always been hitherto confidered as a variety of gum. Its properties are the following.

It is a folid fubftance, having the general appearance and tafte of gum; though it is ufually harder than gum, and not fo eafily reduced to powder. When put into cold water it imbibes that liquid and fwells up very confiderably, and becomes femi-tranfparent and gelatinous, but is not in the leaft foluble, a property by which it is diftinguifhed from gum. It diffolves in boiling water, but again precipitates as the liquid cools, and remains in the ftate of jelly. This gelatinous mafs may be ufed like gum to pafte together pieces of paper, &c. It is infoluble in alcohol and ether; but cold water, acidulated with either of the mineral acids, diffolves a fmall portion of it, and if heated, the whole. When an alkaline folution is dropt into the nitric folution of cerafin, a portion only of the cerafin is precipitated. If the liquid be evaporated, the remainder is obtained converted into a peculiar bitter-tafted fubftance.

Tragacanth gum may be confidered as an example of pure cerafin. (See Tragacanth.) Cerafin alfo conftitutes a portion of the gummy matter that exudes from the prunus *cerafus*, (hence the name,) prunus avium, prunus domeftica, xanthera haftilis, &c.

CERATIOLA, in *Botany*, from κερατιον, *a little horn*, alluding to the appearance of the ftigma.—Michaux Bor.-Am. v. 2. 221. Willd. Sp. Pl. v. 4. 712. Purfh 21.—Clafs and order, *Dioecia Diandria*. Nat. Ord. *Ericis* affine? Juff.

Eff. Ch. Male, Calyx none. Corolla none.

Female, Calyx none. Corolla none. Stigma in many unequal fegments. Berry with two feeds.

1. C. *ericoides*. Heath-like Ceratiola. Willd. n. 1. Purfh n. 1.—Native of Georgia and Florida, in dry gravelly foil; plentiful on the iflands in the mouth of St. Mary's river. *Purfh*. A fmall *fhrub*, determinately branched, refembling a heath; young *branches* finely woolly. *Leaves* four in a whorl, ftalked, linear, revolute, rigid, fmooth, about half an inch long. *Flowers* from fmall lateral *buds*, with concave, fringed fcales. *Anthers* large, of two cells, burfting lengthwife. Segments of the *ftigma* often combined into two little horn-like bodies. *Berry* globular, red, half the fize of a pea. Perhaps this might be confidered as an Empetrum deftitute of *calyx* and *corolla*; fee that article. It forms however a better artificial genus than many daily publifhed. We have fpecimens from Mr. Frafer.

CERIUM, in *Chemiftry*, the name of a metal. This metal, or rather its oxyd, is extracted from a Swedifh mineral formerly confounded with tungften, and was firft obtained feparately by Klaproth, who confidered it as a new earth, to which

which he gave the name of *ochroita*. (See OCHROITE.) About the fame time this mineral was examined with more attention by Hifinger and Berzelius, who gave it the name of *cerit*, and detected in it a peculiar fubftance, which they confidered as a metallic oxyd, to which they gave the name of *Cerium*, from the planet *Ceres*, then lately difcovered by Piazzi. They did ~~not~~ fucceed in reducing this oxyd; nor was Gahn, who made the experiment fome time afterwards, more fuccefsful. Vauquelin, however, who had formerly examined the mineral, turned his attention to the fubject a fecond time, and he fucceeded in reducing it fo far as to fhew that its bafis is a metal.

In 1814 a new fet of experiments was made upon it by Laugier. He appears to have reduced it to the metallic ftate, but combined with carbon. Oxalic acid, according to Laugier, feparates the whole of the oxyd of cerium from iron. The affertion of this chemift, however, that its oxyd is not volatile, has been denied by Dr. Thomfon.

To procure the oxyd of cerium in a ftate of purity, the Swedifh chemifts employed the following method. The mineral was reduced to a fine powder, and digefted in nitric acid till every thing foluble was taken up. The folution was then evaporated to drynefs, and the refidue diffolved in water. Into this folution ammonia was poured, till every thing precipitable by its means was thrown down. The precipitate being well wafhed, was rediffolved in nitric acid, the acid neutralized, and then tartrate of potafh added to the folution. The precipitate thus formed was then heated to rednefs, well wafhed with vinegar, and dried, and was confidered as pure oxyd of cerium.

The oxyd of cerium, when firft prepared, is white ; but when it has been heated it becomes reddifh-brown. Formed into a pafte with oil, and heated in a charcoal crucible, it lofes weight : when urged by a ftrong fire on charcoal, it does not melt but continues in powder. It exhibits, however, brilliant particles, which were proved to be of a metallic nature.

According to Vauquelin and Hifinger, cerium combines with two proportions of oxygen. The protoxyd is white : the peroxyd reddifh-brown. The peroxyd contains $1\frac{1}{2}$ times as much oxygen as the protoxyd. The protoxyd, according to Hifinger, is compofed of

	Cerium	-	100
	Oxygen	-	17.41
The peroxyd of	Cerium	-	100
	Oxygen	-	26.115

From Hifinger's experiments, it appears that the equivalent number for the protoxyd of cerium is 67.5, and of the metal 57.5. But if with Dr. Thomfon we fuppofe the peroxyd to be a compound of two atoms of cerium and three of oxygen, the weight of the atom of peroxyd will be 145.

No compound of this metal with hydrogen, azote, chlorine, nor fluorine is known. The carburet formed by Laugier was a black matter, which took fire fpontaneoufly when expofed to the air. The phofphuret, which appears to have been formed in one inftance by Hifinger and Berzelius, was a hard, brown, tenacious fubftance, which fhone in the dark, and took fire when heated.

Hydrofulphuret of ammonia throws down cerium at firft of a brown colour, but it becomes deep green if the re-agent be added in larger quantity. When dry, the hydrofulphuret formed is a bright green, and burns when heated, leaving a yellow oxyd of cerium. The colour of the precipitate varies, however, according to the ftate of oxydation of the cerium held in folution.

No alloy of cerium is known, except one with iron, obtained by Vauquelin ; this was white, brittle, and diffolved with great difficulty in nitro-muriatic acid.

Salts of Cerium. Nitrate of Cerium.—Nitric acid unites with both the oxyds of cerium ; with the white oxyd it combines moft readily. The folution is colourlefs, cryftallizes with difficulty, retains an excefs of acid, and has a fweet auftere tafte. The red oxyd diffolves with difficulty in cold nitric acid, but the folution may be readily effected by heat. The folution is yellow, and if an excefs of acid be prefent, it yields fmall white deliquefcent cryftals. Both the nitrates are foluble in alcohol, and are decompofed by heat.

Muriate of Cerium.—This falt exifts in the form of fmall four-fided prifmatic cryftals of a yellowifh-white colour. They are foluble in alcohol, and deliquefce on expofure to the air. When expofed to heat they are decompofed.

Sulphate of Cerium.—Sulphuric acid diffolves the red oxyd of cerium with difficulty. The folution when obtained is of an orange-colour, and yields by evaporation fmall octahedral and needle-formed cryftals of perfulphate of cerium. Their colour is partly lemon-colour and partly orange. This falt is not foluble in water without excefs of acid. When expofed to the air, the cryftals foon affume the form of a yellow powder. Sulphuric acid combines readily with the white oxyd of cerium, efpecially when in the ftate of carbonate. The folution is colourlefs, and readily cryftallizes. There is a triple fulphate of potafh and cerium.

Phofphate of Cerium.—This is a white powder infoluble in water, but foluble in the nitric and muriatic acids.

Arfeniate of Cerium.—This falt is infoluble. There is a foluble fuperarfeniate which does not cryftallize.

Acetate of Cerium.—This falt exifts in the form of fmall granulated cryftals, readily foluble in water, but fparingly foluble in alcohol, and not altered by expofure to the air.

Oxalate of Cerium.—Oxalic acid and oxalate of ammonia precipitate cerium from its folution. The precipitate with the peroxyd is red, with the protoxyd white. It is not foluble in excefs of acid, but readily in ammonia.

Tartrate of Cerium.—The tartrate of potafh throws down cerium from its folutions in the form of a white infoluble tartrate. This tartrate, however, is foluble in nitric, muriatic, and fulphuric acids, and alfo in pure alkalies.

Citrate of Cerium.—The citrate of cerium is infoluble, without an excefs of acid, when it is readily foluble. The folution does not cryftallize. The other falts of this metal are unknown, or devoid of intereft. With refpect to thefe falts in general, it may be obferved, that they are either of a white or yellow colour, according to the ftate of oxydation of the metal, and their folutions have a fweetifh tafte. The hydrofulphuret of potafh, pruffiate of potafh, and oxalate of ammonia, produce in them white precipitates ; while the gallic acid and infufion of galls occafion no precipitate, when added to folutions of their falts.

CERIUM. See MINERALOGY, *Addenda*.

CERNE, or CERNE-ABBAS, l. 36, add—In 1811 the parifh contained 145 houfes, and 795 perfons ; *viz.* 358 males, and 427 females.

CERUMEN, or *Ear-Wax*, *Chemical Properties of*. This fubftance is nearly infoluble in water. Alcohol, when affifted by heat, diffolves five-eighths of the cerumen ; the remainder is ftated by Vauquelin to poffefs the properties of albumen mixed with a little oily matter : when the alcoholic folution is evaporated, it leaves a deep orange-refiduum of a very bitter tafte, having the fmell and confiftence of turpentine. It melts when heated, evaporates in a white fmoke, without leaving any refiduum, and in fhort refembles the *refin of bile*.

bile. Ether alfo diffolves this oily body; but the folution is much lefs bitter, and lighter coloured. From thefe and other experiments, Vauquelin confiders cerumen as compofed of

Albumen,
An infpiffated oil,
A colouring matter,
Soda and phofphate of lime.

CESAR's Creek, a townfhip of Greene county, in Ohio, having 640 inhabitants.

CETIC Acid, in *Chemiftry.* A name given by Chevreul to a fubftance obtained by faponifying fpermaceti. It may be procured by adding an acid to a foap compofed of fpermaceti and potafh. Cetic acid is a white folid fubftance, without tafte or fmell. It melts at a temperature of about 113°, but does not cryftallize on cooling, a circumftance in which it differs from fpermaceti. It is infoluble in water, but boiling alcohol diffolves more than its weight of it, and as the folution cools, the cetic acid feparates in brilliant lamellar cryftals. The folution in alcohol reddens litmus. It combines readily with the different falifiable bafes, and forms falts or rather foaps, none of which appear to poffefs any ftriking properties.

CETRARIA, in *Botany*, Acbar. Syn. 226, a natural, but not very eafily defined genus of *Lichenes*, comprifing eleven fpecies, among which are *L. juniperinus*, *glaucus*, *nivalis*, and *iflandicus* of Linnæus. See Lichenes, n. 19 in the arrangement of Acharius.

CEYLANITE, or Pleenaste. See Mineralogy, *Addenda.*

CHACE, col. 2, l. 32, for vizier *r.* veneur.

CHÆTANTHUS, in *Botany*, from χαιτη, *a briftle*, and ανθος, *a flower.*—Brown Prodr. Nov. Holl. v. 1. 251.—Clafs and order, *Dioecia Triandria.* Nat. Ord. *Reftiaceæ*, Br.

This genus is diftinguifhed from Leptocarpus (fee that article) by the undivided *ftyle*, and the minute fetaceous form of the inner fcales of the very fhort calyx. The only fpecies is

1. C. *leptocarpoides*, found by Mr. Brown, on the fouth coaft of New Holland.

CHÆTODON, col. 2, l. *ult.* for Japan *r.* Java. Add—See Teuthis.

Chætodon *Arcuanus.* Add—Perhaps from the Aroo iflands among the Moluccas.

CHÆTOSPORA, in *Botany*, from χαιτη, *a briftle*, and σπορα, *a feed.*—Brown Prodr. Nov. Holl. v. 1. 232.—This genus is founded by Mr. Brown, on thofe fpecies of the Schoenus of Linnæus, and other authors (fee that article), whofe feed is fubtended by briftles, which are not fo long as the *fcales* of the flower. Fifteen fpecies are natives of various parts of New Holland, one of which, *C. lanata*, Br. n. 4, is *Schoenus lanatus*, Labill. Nov. Holl. v. 1. 19. t. 20. The reft appear to have been firft defcribed by Mr. Brown. *Schoenus compreffus* and *rufus* of Fl. Brit. belong to *Chætofpora.* See Rhynchospora for a genus fimilarly characterifed.

CHAIN, col. 2, l. 4 from bottom, *r. Plate* XII.

CHALK, French, *r.* See Slate.

CHAMÆDOREA, in *Botany*, from χαμαι, *dwarf*, and δωρεα, *a gift*, becaufe the lower part of the ftem yields the flowers and fruit.—Willd. Sp. Pl. v. 4. 800. Ait. Hort. Kew. v. 5. 394.—Clafs and order, *Dioecia Hexandria.* Nat. Ord. *Palmæ.*

Eff. Ch. Male, Calyx deeply three-cleft. Corolla deeply three-cleft. Rudiment of a ftyle longer than the ftamens.

Female, Calyx deeply three-cleft. Petals three. Nectary three fcales, between the petals and germen. Styles three. Drupa fucculent, with one feed.

1. Ch. *gracilis.* Slender Chamædorea. Willd. n. 1. Ait. n. 1. (Boraffus pinnatifrons; Jacq. Hort. Schoenbr. v. 2. 65. t. 247, 248.)—Native of the Caraccas and of Guiana. An elegant palm, whofe *trunk* is ten feet high, an inch in diameter, very fmooth, crowned with alternate pinnate *leaves*, two feet long, and fending out from near the bottom feveral long, flender, aggregate *fpikes*, of numerous fmall yellow *flowers*; the male ones longeft, and pendulous. *Fruit* fcarlet, the fize of a pea.

CHAMÆRAPHIS, from χαμαι, *dwarf*, and ραφις, *a needle*, becaufe each of the little fhort partial flower-ftalks bears a very long awn from near its apex.—Brown Prodr. Nov. Holl. v. 1. 193.—Clafs and order, *Triandria Trigynia.* Nat. Ord. *Gramina.*

Eff. Ch. Calyx of two valves, two-flowered; the outer valve very fmall. Corolla of two valves. Outer floret male, its outer valve like the inner valve of the calyx: inner female, fmaller, membranous. Scales two beneath the germen. Stigmas feathery. Seed inclofed in the hardened corolla.

1. Ch. *hordeacea.* Br. n. 1.—Gathered by Mr. Brown, in the tropical region of New Holland.—A perennial grafs, with two-ranked, linear, ftraight *leaves*; their *ftipula* rounded. *Spike* folitary, refembling *Hordeum*, with imbricated *flowers*, in two ranks, parallel to the zigzag *common-ftalk*, on fhort *partial ftalks*, each of which bears, from its infide, near the top, a very long *awn.* It is clofely allied to Panicum (fee that article), differing chiefly in having three *ftyles*, which indeed is extremely peculiar.

CHAMBER, in *Architecture*, l. 5 from the end, *r.* ought not to be, &c.

CHANCEFORD. Add—It contains 996 inhabitants.

Chanceford, *Lower*, a townfhip of the fame county and ftate, having 818 inhabitants.

CHARLEMONT, a townfhip of America, l. 3, *r.* 987.

CHARLES County, l. 4 and 5, *r.* 20,245, including 12,435 flaves.

Charles *City*, l. 4, *r.* 5186, and 3023.

Charles, *St.* Add—Alfo, a parifh of the German coaft county, in the territory of Orleans, containing 3291 inhabitants, of whom 2321 are flaves.—Alfo, a diftrict in Louifiana, containing 3505 inhabitants, including 271 flaves.

CHARLESTON (2d article), l. 5, *r.* 38,468, and 33,714.

Charleston (3d article), infert in l. 1—city; l. *ult.* *r.* 1810, 24,711, and 11,671.

CHARLESTOWN, l. 3.—The population is 5283; the fenatorial electors 669, by the cenfus of 1810. Here are two Prefbyterian or Dutch reformed churches, one for Baptifts, one for Methodifts, and 30 fchool-houfes; l. 7,—The number of inhabitants in 1810 was 28, including one flave; l. 8,—The number of inhabitants is 1580; l. 14,—The population in 1810 was 1501; l. 27, for 2000 *r.* 4959; l. 41, for 2022 *r.* 1174, including one flave.—Alfo, a townfhip of Indiana, in Clark county, having 11 inhabitants.

CHARLETON, col. 2, l. 8, by the cenfus of 1810, the number of inhabitants was 1946, and of fenatorial electors 227; l. 12, for 1965 *r.* 2180.

CHARLOTTE, l. 5, for 635 *r.* 1679.

Charlotte, a county of Virginia, l. 3, for 10,078 *r.* 13,161, and for 4916 *r.* 7597.

CHARLTON. Add—Alfo, a town of Worcefter county, in Maffachufetts, having 2180 inhabitants.

CHARTIER. Add—It contains 1747 inhabitants.

CHARTRES, l. 11, *r.* 48° 26′ 54″. E. long. 1° 29′ 35″.

CHASE, in *Sea-Language*, col. 2, l. 5, *r.* keeps the chaſe.

CHASSIS DE GALERIE, *r.* CHASSES, &c.

CHATHAM, col. 3, l. 19 from bottom, *r.* 2191 and 12,652.

CHATHAM, in America, l. 5, *r.* 1334; l. 8, *r.* 208; l. 12, after 1767, add—It contains 3258 inhabitants; l. 14, after Newark, add—Alſo, a town of Morris county, in New Jerſey, having 2019 inhabitants.—Col. 2, l. 2, *r.* 12,877; l. 3, *r.* 3635; l. 12, after contains, add 7553; l. 13, *r.* 48.

CHAUX *de Fond*, l. 4, *r.* Locle; l. 6, *r.* Locle.

CHEESE, *Chemical Properties of.* See MILK.

CHEESE-*Preſs*, col. 2, l. 22, inſert—*Agriculture*, *Plate*, &c.

CHEILANTHES, in *Botany*, a genus of ferns, firſt diſtinguiſhed from ADIANTUM, (ſee that article in the preſent volume,) by profeſſor Swartz, and named from χεῖλος, *margin*, and ἄνθος, *a flower*, becauſe the fructification is really inſerted into the margin of the frond, not into the ſcales which conceal it. Such indeed was the idea hitherto conceived of *Adiantum*; but this not being the caſe with the original and beſt-known ſpecies, *Capillus Veneris*, the generic appellation was properly allowed to remain with that and its allies, under a corrected character.—Swartz Syn. Fil. 126. t. 3. Willd. Sp. Pl. v. 5. 455. Brown Prodr. Nov. Holl. v. 1. 155. Ait. Hort. Kew. v. 5. 526. Sm. Prodr. Fl. Græc. Sibth. v. 2. 278. Purſh 670.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices annulatæ*.

Eſſ. Ch. Capſules annulated, in diſtinct marginal dots. Involucrum of membranous, diſtinct, inflexed ſcales, ſeparating internally.

Dr. Swartz defines ſixteen ſpecies; profeſſor Willdenow nineteen, the latter diſpoſing the whole in three ſections, though marked as two only, according to an inaccuracy we have often noticed in him. The following are ſufficient examples.

Sect. 1. *Frond ſimply pinnate.* One ſpecies.

Ch. *micropteris.* Small Cheilanthes. Willd. n. 1. Sw. n. 1. 324. t. 3. f. 5.—Frond pinnate, linear; leaflets hairy, nearly orbicular, with wave-like notches.—Native of Quito. *Fronds* narrow, a finger's length, with ſeveral, alternate, ſlightly ſtalked *leaflets*, about a line in diameter.

Sect. 2. *Frond doubly pinnate.* Ten ſpecies.

Ch. *pteroides.* Pteris-like Cheilanthes. Willd. n. 2. Sw. n. 12. Ait. n. 1. (Adiantum pteroides; Linn. Mant. 130. Pteris orbiculata; "Houtt. Nat. Hiſt. t. 96. f. 3.")—Frond doubly pinnate; lower branches ſomewhat compound; leaflets ovate-elliptical, obtuſe, rather heart-ſhaped, finely crenate. Dots crowded. Coverings imbricated. Common ſtalk poliſhed.—Native of the Cape of Good Hope. A handſome fern, a foot or more in height, with ſtout, black, ſhining *ſtalks*, and firm dark-green *leaflets*, half an inch long; paler beneath. This and the following might have been referred to the next ſection.

Ch. *ſuaveolens.* Aromatic Cheilanthes. Willd. n. 5. Sw. n. 6. "Schkuhr Crypt. 116. t. 19." Sm. Fl. Græc. Sibth. t. 966, unpubliſhed. (Polypodium fragrans; Linn. Mant. 307. Desfont. Atlant. v. 2. 408. t. 257. Petiv. Gazoph. t. 73. f. 4.)—Frond doubly pinnate, ſmooth; lower branches more or leſs compound; leaflets ovate, obtuſe, ſomewhat revolute. Common-ſtalk thread-ſhaped, roughiſh with ſlender ſcales.—Found on rocks and old walls in Barbary, Madeira, Cyprus, &c. An elegant little fern, three or four inches high, very fragrant when firſt dried. The copious hair-like tawny ſcales of the *ſtalk* are ſometimes almoſt entirely wanting.

Ch. *fragrans.* Sweet-ſcented Cheilanthes. Willd. n. 7. Sw. n. 4. 325. t. 3. f. 6. Ait. n. 2?—Frond doubly pinnate, ſmooth; leaflets elliptic-lanceolate, obtuſe, pinnatifid, with incurved, partly cloven ſegments. Common-ſtalk ſomewhat hairy.—Native of the Eaſt Indies, from whence Kœnig ſent ſpecimens, which remain unnamed in the Linnæan herbarium. The Madeira plant, gathered by the ſame botaniſt, is, as Dr. Swartz ſuſpected, a different ſpecies, being the *Polypodium fragrans* of Linnæus, our *Ch. ſuaveolens*, which is probably alſo Mr. Aiton's *Ch. fragrans*. The Eaſt Indian fern before us is excellently delineated by profeſſor Swartz, and has a more oblong *frond*, with curiouſly pinnatifid *leaflets*, nor can thoſe who have ſeen both ſpecies ever confound them. We are unacquainted with *Ch. odora*, Willd. n. 6.

Sect. 3. *Frond triply or quadruply pinnate.* Eight ſpecies.

Ch. *dichotoma.* Forked Cheilanthes. Willd. n. 15. Sw. n. 15. 335. t. 3. f. 7.—Frond three or four times pinnate, ſmooth; leaflets three-lobed, obtuſe, ſomewhat crenate.—Native of mountains in Quito. A ſpan high, ſlender and delicate, with alternate, wavy, almoſt capillary *branches*, and minute round-lobed *leaflets*.

Ch. *tenuifolia.* Fine-leaved Cheilanthes. Willd. n. 16. Sw. n. 13. 332. "Schkuhr Crypt. t. 125." Br. n. 1. (Trichomanes tenuifolia; Burm. Ind. 237. Dryopteris campeſtris; Rumph. Amboin. v. 6. 74. t. 34. f. 2.)—Frond triply pinnate, ſmooth; leaflets obovate-oblong, ſlightly crenate; upper ones confluent.—Native of the Eaſt Indies. This has the habit of *fragrans* and its allies, but is much larger.

Ch. *dealbata.* White-leaved Cheilanthes. Purſh n. 2.—"Frond triply pinnate; leaflets oval, diſtinct, crenate or emarginate at the end; white beneath."—On rocks, on the banks of the Miſſouri, in July. A very delicate ſmall fern, much reſembling *Ch. tenuifolia*. *Purſh.*

CHEKIE, or CHEQUEE, a Turkiſh weight: that with which gold, ſilver, diamonds, and precious ſtones are weighed, is divided into 100 drachms, and the drachm into 16 killots or carats, or 64 grains. A chequee weighs 10 oz. 5 dwts. 3 grs. troy weight; and a drachm $49\frac{1}{2}$ grs. ditto; ſo that 48 chequees = 41 lbs. troy nearly. The oke is = 4 chequees, or 400 drachms; and the chequee = 11 oz. avoirdupois. The chequee of goats' wool is 800 Turkiſh drachms, or 5 lbs. 10 oz. avoirdupois; the chequee of opium 250 Turkiſh drachms = 27 oz. 10 drs. avoirdupois.

CHELMSFORD, col. 2, l. 12 from the bottom, *r.* 4649 and 822.

CHELMSFORD, in America, l. 4, *r.* 1396.

CHELSEA, in America, l. 3, *r.* 594; l. 8, *r.* 1327.

CHELTENHAM, col. 2, l. 19 from the bottom, *r.* 8325; l. 12, *r.* 1568.

CHELTENHAM, a townſhip of Montgomery county, in Pennſylvania, having 783 inhabitants.

CHEMIN CREUX, *r.* RAVINE.

CHENANGO, a county of New York, containing, by the cenſus of 1810, 21,704 inhabitants, of whom 13 are ſlaves.

CHEPSTOW, col. 4, l. 48, for wall *r.* walk. Add—The pariſh of Chepſtow contained, in 1811, 421 houſes, and 2581 perſons; 1158 being males, and 1423 females.

CHERAY, or CHURAY, a weight in Perſia; the batman of Churay being double the batman of Taurus, and weighing 12 lbs. 4 oz. 13 drs. avoirdupois.

CHERBOURG, l. *ult.* *r.* N. lat. 49° 38′ 31″. W. long. 1° 37′ 18″.

CHERRYFIELD, in *Geography*, a town of Waſhington county, in the diſtrict of Maine, with 181 inhabitants.

CHERRY-

CHERRY-TREE, a townſhip of Venango county, in Pennſylvania, having 391 inhabitants.

CHESHAM. The pariſh of Cheſham, in 1811, contained 417 houſes, and 2071 perſons; 924 being males, and 1147 females.

CHESHIRE, col. 2, l. 4 from the bottom, *r.* 41,187 and 227,031.

CHESHIRE. By the returns of 1811, Aſhton-upon-Merſey in this county, and in a pariſh of the ſame name (omitted in its alphabetical arrangement), appears to have then contained 156 houſes, and 918 perſons; 467 being males, and 451 females.

CHESHIRE, in America, *dele* l. 5 and 6, and add—and 40,988 inhabitants.

CHESHIRE, a townſhip, &c. l. 3, add—containing 1315 inhabitants. At the cloſe, add—It contains 2288 inhabitants.

CHESNUT HILL. Add—containing 1128 inhabitants.

CHEST, in *Anatomy*, l. 2, inſert—LUNGS.

CHEST *of Viols*, *dele* SIX-STRINGED BASE.

CHESTER, col. 6, l. 17. In 1811, the city of Cheſter contained 3296 houſes, and 16,140 perſons; 7007 being males, and 9133 females: 397 families employed in agriculture, and 2296 in trade and manufactures.

CHESTER, in Nova Scotia, l. 8, *r.* 1534; l. 13, *r.* 2030; l. 17, *r.* 2370; l. 30, after aſſiſtants, add—It contains 1056 perſons; l. 32, *r.* 40; l. 33, *r.* 39,596; l. 34, *r.* 7; l. 57, *r.* 11,479; l. 58, *r.* 2743. At the cloſe, add—Alſo, a town of Clinton county, in Ohio, having 1254 perſons.—Alſo, a town of Burlington, in New Jerſey, having 1839 inhabitants.—Alſo, a town of Morris county, in New Jerſey, having 1175 inhabitants.—Alſo, a borough of Cheſter county, in Pennſylvania, having 471 inhabitants.

CHESTER, *Weſt*, a county of New York, containing 30,272 inhabitants, of whom 982 are ſlaves.

CHESTERFIELD, col. 2, l. *ult.* In 1811 the pariſh of Cheſterfield contained 951 houſes, and 4476 perſons; 2025 being males, and 2451 females.

CHESTERFIELD, l. 3, *r.* 1408; l. 7, *r.* 1839; l. 15,—It contains 5564 inhabitants, of whom 1639 are ſlaves; l. 17, *r.* 9979, and 6015. Add—Alſo, a town of Burlington county, in New Jerſey, having 1839 inhabitants.

CHESTER-LE-STREET. In 1811, the townſhip of Cheſter-le-Street contained 245 houſes, and 1726 perſons; 800 being males, and 926 females.

CHESTERVILLE, a town of the diſtrict of Maine, in the county of Kennebeck, with 430 inhabitants.

CHETWERT, and CHETWERICK, two corn meaſures in Ruſſia; the former or cool being 2 oſmins = 4 pajacks = 8 chetwericks = 64 garnitzy. The latter meaſures 1555.92 cubic inches, and contains 5¾ Wincheſter gallons nearly. In buſineſs the uſual calculation is, that 100 chetwerts produce 72 quarters, and 1 chetwert 5¾ buſhels, Wincheſter meaſure.

CHIASTOLITE. See MINERALOGY, *Addenda*.

CHICHESTER, in *Geography*. In 1811, the city of Chicheſter contained 1083 houſes, and 6425 perſons; 2878 being males, and 3547 females.

CHICHESTER, *Upper and Lower*. Add—The former contains 437, and the latter 511 inhabitants.

CHICHESTER, l. 4, *r.* 951.

CHILISQUAQUE. Add—Northumberland county, having 1505 inhabitants.

CHILLIKOTHE. Add—By the cenſus of 1810, it contained 1360 inhabitants.

CHILMARK, l. 3, *r.* 723.

CHILODIA, in *Botany*, perhaps from χειλος, in alluſion to its longer and more conſpicuous lip.—Brown Prodr. Nov. Holl. v. 1. 507.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Br.

Eſſ. Ch. Calyx two-lipped, with a pair of appendages; tube ſtriated; upper lip undivided, with an interior tranſverſe rib; lower divided half way. Corolla ringent; upper lip ſhorteſt, undivided; lower with a large cloven central lobe. Anthers pointleſs, deeply cloven at the baſe.

1. Ch. *ſcutellariana*. Br. n. 1.—Gathered by Mr. Brown at Port Jackſon, New South Wales. A little ſhrub, agreeing with *Proſtanthera* in habit, but differing in *calyx* and *anthers*. The *leaves* are linear, revolute. *Flowers* axillary, ſolitary, ſtalked. We venture to rid the ſpecific name of its termination, *oides*, which might be done with advantage in many other ſimilar inſtances.

CHILOGLOTTIS, from χειλος, *a lip*, and γλωττα, *the tongue*, alluding to the tongue-ſhaped appendage to the lip.—Brown Prodr. Nov. Holl. v. 1. 322.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ringent; two lower leaves under the lip, channelled, with cylindrical points. Lip ſtalked; glandular in the diſk; with a tongue-ſhaped appendage at the baſe. Column cloven at the top. Anther a terminal permanent lid; the cells cloſe together. Maſſes of pollen two in each cell, powdery, compreſſed.

1. Ch. *diphylla*.—Native of Port Jackſon, New South Wales. *Bulbs* ſolitary, naked, terminating the deſcending *caudex*. *Herb* ſmooth. *Leaves* two, oval, many-ribbed, ſheathed at the baſe. *Flower* ſolitary, reddiſh, with a ſolitary *bractea* half way up the ſtalk. Akin to CYRTOSTYLIS and PTEROSTYLIS. *Brown*. See thoſe articles.

CHIMBORAZO, l. 9, add—according to Humboldt, its ſummit is 21,430 feet above the level of the ſea; and conſequently a great part is above the circle of perpetual congelation, which, in this latitude almoſt under the line, is ſituated higher than the ſummit of Mont Blanc.

CHINA, col. 3, l. 19 from the bottom, *r.* Mandſhurs. Col. 24, l. 4, *r.* ſticks or poles.

CHIODECTON, in *Botany*, from χιων, *ſnow*, and δεχομαι, *to receive*, alluding to the whiteneſs of the warts or aggregate receptacles.—Achar. in Tr. of Linn. Soc. v. 12. 43. t. 3.—A genus of cruſtaceous Lichens, found on the barks of trees in South America, thus defined.

Eſſ. Ch. Warts convex, of the ſubſtance of the cruſt. Receptacles numerous, imbedded in the warts, globular, aggregate, black, powdery throughout.

Two ſpecies are deſcribed, *Ch. ſphærale*, f. 2, and *ſeriale*, f. 3.

CHIPPENHAM, l. 30,—In 1811, the borough and pariſh contained 668 houſes, and 3410 perſons; *viz.* 1580 being males, and 1830 females: 145 families employed in agriculture, and 652 in trade and manufactures.

CHITTENDEN, l. 6, *r.* 1810; l. 24, *r.* 1820. At the cloſe, add—It contains 446 inhabitants.

CHLOANTHES, in *Botany*, χλοανθης, *turning green*; from the colour aſſumed by the pale yellow corolla in drying, as is the caſe with the primroſe.—Brown Prodr. Nov. Holl. v. 1. 513.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Vitices*, Juſſ. Gen. *Verbenaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx bell-ſhaped, equally five-cleft. Corolla tubular, ringent; throat dilated; upper lip cloven; lower in three deep ſegments, the middle one longeſt. Stamens prominent. Stigma cloven, acute. Drupa dry. Nuts two, each of three cells; two lateral cells ſingle-ſeeded; middle one abortive, obliterated.

Downy *ſhrubs*, with oppoſite, ſimple, decurrent, linear, bliſtery *leaves*. *Stalks* axillary, ſolitary, ſingle-flowered, each

each with two *bracteas*. *Calyx* rather leafy, revolute at the edges. *Corolla* fulphur-coloured; turned green by drying. *Nuts* tumid in front. *Seeds* with fcarcely any albumen. *Brown*.

1. Ch. *ftoechadis*. Br. n. 1.—Back of the leaves, and outfide of the calyx, fnow-white, downy. Bracteas in the middle of the flower-ftalks.—Native of Port Jackfon, New South Wales.

2. Ch. *glandulofa*. Br. n. 2.—Back of the leaves glandular, and clothed, like the outfide of the calyx, with fcattered hairs. Bracteas at the bafe of the flower-ftalks.—From the fame country.

CHLORATES, in *Chemiftry*. See Chlorine.

CHLORIC *Acid*. See Chlorine.

CHLORINE. This name was given by fir H. Davy to the principle formerly termed Oxymuriatic *Acid*, under which head its leading properties are detailed. We have only therefore to notice here fome important compounds of this principle lately difcovered, efpecially thofe with oxygen.

The *protoxyd* of chlorine, or *euchlorine*, has been already defcribed under the article above alluded to. For its correct compofition, fee Table II. Atomic *Theory*.

The *deutoxyd* of chlorine was difcovered about the fame time by fir H. Davy and the count Von Stadion of Vienna, but Davy's account of it was firft publifhed. It may be prepared by mixing together a fmall quantity of chlorate of potafh (not more than fifty grains) in powder, with fulphuric acid, till the whole forms a dry pafte of an orange colour. Put this pafte into a fmall glafs retort, and plunge the belly of the retort into hot water, and keep it in that pofition for fome time, taking care that the temperature of the water never becomes fo high as 212°. A bright yellowifh-green gas feparates from the pafte, which muft be received in fmall glafs jars over mercury. This gas is the deutoxyd of chlorine. Its colour, as above ftated, is a bright yellowifh-green. Its fmell is peculiar and aromatic, without any mixture of the fmell of chlorine. Water abforbs at leaft feven times its bulk of this gas. The folution is deep yellow, and has an aftringent and corrofive tafte, leaving a difagreeable and lafting impreffion on the tongue. It deftroys without previoufly reddening vegetable colours, provided they are moift. It does not act upon mercury, nor any other combuftible fubftance tried, except phofphorus, which, when introduced into the gas, occafions an explofion, and burns with great fplendour. When heated to 212° it explodes with more violence than euchlorine, and emits a great light. Two volumes of deutoxyd of chlorine, when thus exploded, are converted into three volumes, according to Davy, which confift of two volumes or four atoms of oxygen and one of chlorine, or *per cent.* of

Chlorine - - -	52.94
Oxygen - - -	47.06
	100.00

And its fp. gr. will be 2.361, that of chlorine being fuppofed to be 2.5. According, however, to the count Von Stadion's analyfis, this deutoxyd is compofed of one atom chlorine, and only three of oxygen.

Chloric Acid.—The exiftence of this compound of chlorine with oxygen was fufpected by Berthollet, but it was firft obtained by M. Gay Luffac. It is the acid which exifts in what was formerly termed *oxymuriate*, but now *chlorate* of potafh. It was procured by diffolving the chlorate of barytes in water, and cautioufly adding dilute fulphuric acid to the folution, till the whole of the barytes was feparated. The *chloric* acid remained in folution. This acid has a ftrong four tafte, but no fenfible fmell. Its aqueous folution is colourlefs, and reddens vegetable blues without deftroying them. By a gentle heat it may be concentrated without being decompofed, or volatilized with the water. When thus concentrated, it has an oily confiftency. When the heat is raifed, it is partly volatilized, and partly decompofed into chlorine and oxygen. Muriatic acid decompofes it fimilarly without heat: the nitric acid does not affect it. It combines with the different bafes forming *chlorates*, formerly termed *oxymuriates*, the moft important of which will be prefently defcribed. Chloric acid has been proved to be compofed of

Chlorine - - -	47.24
Oxygen - - -	52.76
	100.00

Or of one atom chlorine and five of oxygen. See Atomic *Theory*, Table II.

Chlorate of Potafh.—This is the beft known and moft important of the chlorates. See it briefly defcribed under Hyperoxymuriatic *Acid*.

Chlorate of Soda.—This falt was firft accurately defcribed by Chenevix. It may be prepared by the fame procefs as the chlorate of potafh; but the eafieft mode of obtaining it is, to diffolve carbonate of foda in chloric acid. It does not readily cryftallize, but its cryftals when formed are fquare plates. Its tafte is fharp and cooling. On burning coals it melts into globules, and emits a yellow light. When diftilled it gives out oxygen, mixed with a little chlorine, and the falt left behind has alkaline properties.

Chlorate of Ammonia.—This falt may be formed by diffolving carbonate of ammonia in chloric acid, or by mixing a folution of carbonate of ammonia with a folution of an earthy chlorate. It cryftallizes in fine needles, and is very foluble in water and alcohol. Its tafte is fharp. Thrown on burning coals, it fulminates with a red flame. When ftrongly heated, it is decompofed, chlorine is evolved mixed with azote and oxygen, and fome muriate of ammonia remains behind.

Chlorate of Barytes.—The earthy chlorates are formed with more difficulty than the alkaline. The chlorate of barytes may be formed by pouring warm water on a quantity of the pure earth prepared by Vauquelin's method, and paffing a current of chlorine through the mixture. To feparate the chlorate from the muriate, which are both equally foluble, and otherwife refemble each other, Mr. Chenevix had recourfe to the ingenious expedient of boiling phofphate of filver with the compound folution; thus muriate of filver and phofphate of barytes are formed and eafily feparated, while nothing but the chlorate of barytes remains in the folution, and may be eafily obtained. This falt cryftallizes in fquare prifms, terminated by an oblique face. It diffolves in about four times its weight of cold water. The folution is neither precipitated by nitrate of filver nor muriatic acid. It is infoluble in alcohol. When heated it gives out oxygen gas, and an alkaline refiduum is left.

Chlorate of Strontian.—This falt was formed by a procefs fimilar to the above, and refembles it in many of its properties, but is deliquefcent, and rather more foluble.

Chlorate of Lime, and *Chlorate of Magnefia*, may be formed as above. They are both deliquefcent, and very foluble both in water and alcohol.

The metallic *Chlorates* may be formed by diffolving the oxyds

oxyds of the different metals in chloric acid. They do not possess any very remarkable properties, except those common to all the chlorates; *viz.* of giving out oxygen when heated, and of detonating when thrown on burning coals. The chlorate of silver, mixed with a little sulphur, and struck slightly, fulminates with prodigious violence.

CHLORIODIC Acid. See Iodine and Simple *Substances.*

CHLORITE. See Mineralogy, *Addenda.*

CHLORO-CYANIC Acid. See Cyanogen.

CHLOROPHANE. See Mineralogy, *Addenda.*

CHLOROPHYTUM, in *Botany*, from χλωρον, *green*, and φυτον, *a plant*, because of the green hue of the flowers, as well as herbage, in the original species.—Ker in Curt. Mag. 1071. Brown Prodr. Nov. Holl. v. 1. 276.—Class and order, *Hexandria Monogynia.* Nat. Ord. "*Bromeliæ*, Juss." *Ker. Asphodeleæ*, Brown.

Ess. Ch. Corolla inferior, in six deep, equal, spreading, permanent segments. Filaments thread-shaped, smooth. Style thread-shaped. Stigma simple. Capsule with three deep compressed lobes, three cells, and three valves with central partitions. Seeds several, compressed, with a naked scar.

Herbage smooth. *Root* fasciculated; the fibres occasionally fleshy. *Leaves* radical, ribbed, linear, sometimes lanceolate. *Flowers* racemose green or white, their partial stalks jointed in the middle. *Capsule* membranous, veiny.

1. Ch. *inornatum.* Greenish-flowered Chlorophytum. Curt. Mag. t. 1071. Ait. Epit. 365.—Stem none. Leaves lanceolate, nearly as tall as the stalk. Partial stalks solitary.—Native of Sierra Leone, from whence, and not from the West Indies, its seeds were brought to the late Mr. Fairbairn, at Chelsea, if we mistake not, by Francis Borone, in 1793. It is a stove plant, flowering and seeding in summer. Several radical, many-ribbed, pointed *leaves*, five or six inches long, paler beneath, are accompanied by an erect, simple or branched, leafless *stalk*, a span high. *Flowers* pale green, scentless, each with a pointed *bractea. Corolla* spreading, three-quarters of an inch wide.

2. Ch. *laxum.* Loose-clustered White Chlorophytum. Br. n. 2.—"Stem none. Leaves linear, nearly as tall as the stalk. Clusters lax, elongated, simple or divided; partial stalks solitary or in pairs."—Found by Mr. Brown, in the tropical part of New Holland.

3. Ch. *elatum.* Tall Chlorophytum. (Anthericum elatum; Ait. Hort. Kew. v. 2. 268. Willd. Sp. Pl. v. 2. 138. Asphodelus foliis planis, &c.; Mill. Ic. 38. t. 56. Phalangium elatum; Redout. Liliac. t. 191.)—Stem much branched, almost leafless, much taller than the linear-lanceolate radical leaves.—Native of the Cape of Good Hope. A perennial green-house plant, flowering in August and September. The *flowers* are copious, white, smaller than in the first species, solitary and almost sessile.

Mr. Brown mentions a fourth species, found at the Cape, but without any name or character.

CHONDRACHNE, Brown Prodr. Nov. Holl. v. 1. 220, a genus consisting of only one species, distinguished by its inflorescence alone from Chorizandra; see that article.

CHORD, col. 2, l. 13, for EO *r.* ED.

CHORETRUM, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 354.—Class and order, *Pentandria Monogynia.* Nat. Ord. *Santalaceæ*, Br.

Ess. Ch. Calyx superior, in five deep, vaulted, coloured segments, each with an interior descending keel, permanent, with a minute five-toothed calycle at the base. Stamens in the hollows of the segments. Anthers with four cells and four valves. Stigma radiated. Drupa?

The only known species are *Ch. lateriflorum* and *glomeratum*, found on the south coast of New Holland, rushy branched shrubs, with minute scattered *leaves*, and small white *flowers*, being nearly related to Leptomeria; see that article.

CHORISPERMUM, from χωρις, *separately*, and σπερμα, *seed*, see the character.—Brown in Ait. Hort. Kew. v. 4. 129.—Class and order, *Tetradynamia Siliquosa.* Nat. Ord. *Siliquosæ*, Linn. *Cruciferæ*, Juss.

Ess. Ch. Pod of two cells, without valves, separating into single-seeded closed fragments. Cotyledons flat, accumbent. Stigma simple.

1. Ch. *tenellum.* Purple Chorispermum. Ait. n. 1. (Raphanus tenellus; Willd. Sp. Pl. v. 3. 561. Pallas Voy. v. 3. 741. t. L. f. 3.)—Leaves, as well as pods, smooth; upper ones lanceolate, toothed; lowermost pinnatifid.—Native of desarts near the Caspian sea. A little annual *herb*, with small purple flowers. Mr. Brown's specific character indicates the existence of another species, not known to us.

CHORIZANDRA, from χωριζω, *to separate*, and ανηρ, *a male*, because the stamens are individually separated by scales.—Brown Prodr. Nov. Holl. v. 1. 220.—A genus consisting of two species, natives of Port Jackson, nearly akin to Chondrachne of the same author, and to the Linnæan Chrysitrix; see those articles. From the latter it differs in inflorescence and habit. How far they could with propriety be united, we have not materials to form a decisive opinion.

CHORIZEMA, a name of which there have been various explanations, (see Tr. of Linn. Soc. v. 9. 252,) is most probably derived from χωριζω, *to separate;* but certainly not in allusion, as De Theis supposes, to any division of the fruit. We rather believe the author of this name had in contemplation the separate filaments, of which so few instances were known in papilionaceous flowers, at the time he wrote, and ημα may allude to their *dart-like* figure.—Labill. Voy. Engl. ed. v. 1. 435. Nov. Holl. v. 2. 120. Sm. in Sims and Kon. Ann. of Bot. v. 1. 506. Tr. of Linn. Soc. v. 9. 251. Ait. Hort. Kew. v. 3. 8. (Podolobium; ibid. 9.)—Class and order, *Decandria Monogynia.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Ess. Ch. Calyx five-cleft, two-lipped. Corolla papilionaceous. Style curved. Stigma obtuse. Legume oblong, tumid, of one cell, with many seeds.

1. Ch. *ilicifolia.* Holly-leaved Chorizema. Labill. as above, t. 21. Sm. n. 1. Ait. n. 1.—Leaves alternate, oblong, pinnatifid, with spinous teeth; point entire, longer than the teeth. Bracteas close to the flower.—Found by M. Labillardiere, at the foot of the mountains, on the south coast of New Holland, flowering in December. Sent to Kew in 1803, by Mr. Good. *Stem* shrubby, hardly a foot high, branching from the root. *Leaves* alternate, sessile, smooth, coriaceous, with sharp spines. *Flowers* in terminal clusters.

2. Ch. *nana.* Dwarf Chorizema. Sims in Curt. Mag. t. 1032. Ait. n. 2. (Pultenæa nana; Andr. Repos. t. 434.)—Leaves alternate, elliptic-oblong, bluntish, sinuated, with spinous teeth. Bracteas rather distant from the flower.—From the same country. We profit by Mr. Brown's remarks for distinguishing this species, hitherto confounded by us with the foregoing. Its stature is more humble. *Flowers* in lateral clusters, orange, with purple *wings*, and a short, white, purple-tipped *keel.* We know not distinctly the colour of *ilicifolia.*

3. Ch. *rhombea.* Few-flowered Chorizema. Br. in Ait. n. 3.—"Leaves entire, flat, pointed; lower ones orbicular, somewhat

ſomewhat rhomboid; upper elliptic-lanceolate. Stalks with few flowers.—Native of the ſame country. *Mr. Brown.*

4. Ch. *triloba.* Three-lobed Chorizema. Sm. n. 2. (Podolobium trilobum; Ait. Hort. Kew. v. 3. 9. Curt. Mag. t. 1477. Pultenæa ilicifolia; Andr. Repoſ. t. 320.) —Leaves oppoſite, ſomewhat haſtate; entire or toothed, ſpinous. Cluſters axillary, ſhorter than the leaf. Germen ſilky.—Found near Port Jackſon, New South Wales. (See Podolobium.) Young *branches* and *leaves* downy. *Flowers* copious, yellow, with a red radiating ſpot, and red *keel,* the latter nearly as long as the *wings.*

5. Ch. *ſcandens.* Climbing Chorizema. Sm. n. 3.—Leaves nearly oppoſite, elliptical, undivided. Cluſters terminal, elongated. Calyx rather hairy.—Found by Dr. White, at Port Jackſon. *Stem* twining. *Flowers* in looſe pendulous cluſters, yellow variegated with red.

6. Ch. *ſericea.* Silky-leaved Chorizema. Sm. n. 4.—Leaves moſtly alternate, elliptical. Cluſters axillary, the length of the leaves. Calyx ſilky. Standard narrow.—Gathered by Mr. Menzies, at King George's ſound. *Stem* twining. *Leaves* more ſilky at the back than in *C. ſcandens; flowers* thrice as large as in that ſpecies.

7. Ch. *coriacea.* Leathery-leaved Chorizema. Sm. n. 5.—Leaves roundiſh-elliptical, abrupt, coriaceous, ſcattered. Umbels axillary, ſtalked. Calyx hairy.—From the ſame country. A ſtout, upright, rigid *ſhrub. Leaves* beautifully veiny; ſilky beneath. *Umbels* on ſilky ſtalks, much ſhorter than the leaves.

CHOUT, denotes in India a fourth part; and the Mahratta chout is a fourth of the revenues, exacted as tribute by the Mahrattas.

CHOWAN, l. 3, *r.* 5297 and 2789.

CHRISTCHURCH. In 1811 the borough and ſtreet contained 303 houſes, and 1553 perſons; 682 being males, and 871 females.

CHRISTIAN, a county of Kentucky, containing 10,889 inhabitants, of whom 1708 are ſlaves.

Christian *d'Or,* a Daniſh gold coin, current in Holſtein ſince 1775, worth about 13 marks lubs, or 26 marks Daniſh currency.

CHRISTIANA. Add—By the cenſus of 1810, it contained 6698 inhabitants, 47 being ſlaves.

CHRISTINA, Santa,—for Christiania *r.* Christiana.

CHRISTOPHER's, St., col. 2, l. 13 from bottom, *r.* W. long. 62° 43′.

CHROMATE *of Iron.* See Mineralogy, *Addenda.*

CHROME, or Chromium, in *Chemiſtry,* the name of a metal. (See Chrome.) Since that article was written, however, ſome facts have been aſcertained reſpecting this metal and its compounds, which deſerve to be briefly mentioned here.

Chrome ſeems capable of combining with three different proportions of oxygen, and of forming three oxyds, the *green,* the *brown,* and the *yellow* or *chromic acid.* The *green* oxyd may be formed by expoſing chromic acid to heat in cloſe veſſels, by which means a portion of the oxygen is expelled. It may be alſo formed in other modes, as by precipitation; in which caſe it has a dark green colour, and contains water. In this ſtate it readily diſſolves in acids, but if expoſed to a heat a little below redneſs, it becomes ignited, diminiſhes in bulk, and its colour changes to a lighter green. It is now no longer ſoluble in acids, though it has loſt no weight. The *brown* oxyd may be formed by diſſolving the above green oxyd in nitric acid, evaporating the ſolution to dryneſs, and expoſing the dry maſs to heat, till it ceaſes to give out nitrous fumes. A brown brilliant powder remains, which is ſoluble in alkalies but not in acids. It is not improbable, that this will be found hereafter to be a *ſubnitrate* inſtead of an oxyd. *Chromic acid,* the third oxyd of chromium, is eaſily reduced to the ſtate of green or protoxyd, by the action of ſulphuretted hydrogen, ſulphureous acid, and protoxyds of iron, copper, and tin.

The *chromates* have been already deſcribed. The *chromate* of lead is the only one much uſed, which has been lately employed as a paint with great ſucceſs.

CHRONOLOGY, Chronological Table,

B.C. 710, Sennacherib's army deſtroyed, &c. Col. 9, l. 20, *r.* eclipſe of the *ſun;* for 549 *r.* 558, Daniel, &c. Col. 11, l. 38, *r.* Perſians; l. 41, *r.* 466. Col. 12, l. 2, *r.* Hellanicus. Col. 18, l. *penult.,* inſert—at. Col. 22, l. 2, after kingdom, inſert—of Cyrené. Col. 29, l. 33, *r.* Macrinus; l. 35, ditto. Col. 30, l. *ult. r.* Hierocles. Col. 34, l. 24, for one *r.* that; l. 45, *r.* Anien. Col. 38, l. 3 from the bottom, add—at Rome. Col. 39, l. 49, *r.* 206. Col. 41, l. 60 and 61, *dele* Charlemagne, &c. Col. 46, l. 27 and 28 *dele.* Col. 47, l. 7 from the bottom, for Frederic *r.* Ladiſlaus II. Col. 52, l. 2, for Babylon *r.* Egypt; l. 9, ditto; l. 21, *dele* 1298; l. 27, *dele* the Ottoman empire began. Col. 55, l. 21, 22, *dele.* Col. 58, l. 32, *dele* Brazil diſcovered; l. 51, for 800 *r.* 780; l. 64, for North *r.* South. Col. 59, l. 53, *r.* Navaro. Col. 63, l. 21 *dele;* l. 61, after Palladio, add—Frobiſher fails for Greenland, and again in the following year. See Frobisher; l. 63, after 1580, inſert—ſee Drake. Col. 64, l. 27, *dele* Greenland diſcovered. Col. 65, l. 32, for April 22 *r.* June 2. Col. 70, l. 41, after 22, add—in the battle of Gothard; l. 42, *dele* the battle of St. Godart, July 22. Col. 71, l. 53, *r.* Seneff. Col. 74, l. 15, for July *r.* February. Col. 75, l. 37, *r.* ob. 1719, æt. 74. Col. 76, l. 1 and 2, *r.* When the Spaniards, under the duke of Vendôme, defeated Staremberg. Col. 78, l. 1 and 2, *dele* the Spaniards, &c. May 20; l. 10, for June *r.* May; l. 33 *r.* 1744, æt. 56. Col. 79, l. *penult., r.* 76. Col. 82, l. 38, for Aug. *r.* September. Col. 84, l. 20, add—(from next paragraph)—The Turkiſh fleet, &c. July 5, and *dele* theſe words in that paragraph. Col. 85, l. 4 from bottom, add —Inquiſition of Naples aboliſhed. Col. 87, l. 4, 5, and 6, *dele* French, &c. bay; l. 11 and 12, *dele* Ghent, &c. Dec. 12; l. 20, for Yorkſhire in 1780 *r.* Glouceſter; l. *ult.* but 2, inſert—Ghent and Bruſſels ſurrendered. Col. 88, l. 24, after French king, add—appeared at the bar of the convention for the laſt time, Dec. 26, 1792; and condemned by vote, Jan. 16, 1793; and ſuffered on the 21ſt. Col. 89, l. 10 from bottom, add—The French accounts ſtate the number of perſons at 60, inſtead of 3000, and date the cataſtrophe Aug. 3, inſtead of Sept. 3. Col. 91, l. 2, after Buonaparte, add—was employed in protecting the directory againſt an inſurrection of the Jacobins, which was his firſt appearance under a conſpicuous character. *Dele* ſeized Egypt, July 1; l. 48, after Feb. 22, add—1200 Frenchmen landed at Fiſhguard, and immediately ſurrendered themſelves priſoners. Col. 93, l. 2, after ſlain, *dele* near Periapatam, and add—in the defence, and within the walls of his capital, Seringapatam; l. 3, after forces, add—under general Harris; l. 54, *r.* June 14. Col. 94, l. 2, after battle of, for Rhamonia *r.* Alexandria; l. 3, after Engliſh (March 21), add—under ſir Ralph Abercromby, who was wounded in the conteſt, which terminated ſo honourably to himſelf and the army, and died a few days after, univerſally lamented; l. 8, for September *r.* April; l. 12, after two, *r.* Spaniſh ſhips being blown up; *viz.* the admiral's ſhip and the San Hermanegildo of 112 guns ſunk; and the San Antonio of 74 guns, commanded by the chef de diviſion Le Rey, under French colours, taken by the Superb, July 13; l. 31, *dele* from ſir Ralph, &c. to lamented. Col. 98, add—

1807.—Battle between the French and Ruſſians, in which the latter were defeated, Feb. 7.—Battle of Friedland, in which the Ruſſians were defeated with great ſlaughter, June 14.—St. Thomas, a Daniſh iſland, taken by the Engliſh, Dec. 21.

1808.—Battle of Vimiera, in which the whole of the French force, under general Junot, was defeated by ſir Arthur Welleſley, Aug. 21.

1809.—Cayenne taken by the Engliſh and Portugueſe, Jan. 15.—Battle of Corunna, in which the French were defeated by the Engliſh, Jan. 16.—Battle of Oporto, in which the French were defeated by ſir Arthur Welleſley, May 11.—Battle of Aſpern and Eſsling between the French and Auſtrians, with dreadful ſlaughter on both ſides, May 21 and 22.—Pope Pius VII. excommunicated Buonaparte, June 10.—At Raab, Auſtrians defeated by the French, June 14.—At Wagram, Auſtrians defeated by the French, July 5.—Battle of Talavera de la Reyna, in which the French were defeated by the Engliſh and Spaniards, July 27.—Zante, and the reſt of the Seven Iſlands, ſurrendered to the Britiſh in October.—Buonaparte divorced from the empreſs Joſephine, Dec. 17.—General Jubilee through the kingdom, celebrating the entrance of George III. on the 50th year of his reign.

1810.—Iſlands of Faroe and Iceland taken under Britiſh protection, Feb. 12.—Amboyna ſeized by the Engliſh, Feb. 17.—Buonaparte married to Maria Louiſa of Auſtria, April 1.—Iſle of Bourbon ſurrendered to the Britiſh, July 10.—Battle of Buzaco, in which the French were repulſed with great ſlaughter by the allied army under lord Wellington, Sept. 27.—Mauritius ſurrendered to the Britiſh, Dec. 3.

1811.—Population of London, Weſtminſter, Borough, and neighbouring diſtricts, appeared to be 1,099,104, being an increaſe, in two years, of 133,139.—Iſland of Java ſurrendered to the Britiſh, Sept. 18.—Battle of Civdad Rodrigo, between the French and allied armies, under lord Wellington, which terminated in an orderly retreat of the latter, Sept. 25.—Cavares and Merida, the French, under general Girard, ſurpriſed and routed by general Hill, Oct. 28.

1812.—Badajos taken by ſtorm by the Britiſh and Portugueſe, April 6.—Spencer Perceval, prime miniſter of Britain, aſſaſſinated in the lobby of the houſe of commons, by John Bellingham, May 11.—Battle of Salamanca, in which the French were defeated with great ſlaughter by lord Wellington, July 22.—Smolenſko, the Ruſſians defeated by the French, Aug. 16.—Queen's Town, Canada, the army of the United States defeated by the Britiſh, Oct. 12.—Polotſk, the French defeated by the Ruſſians, and the place taken by ſtorm, Oct. 20.—The French driven from Dorogobudſh by the Ruſſians, under Platoff, with great ſlaughter, Nov. 7.—At Witepſk, the French, under general Victor, defeated by the Ruſſians, under Witgenſtein, with the loſs of 3000 men, Nov. 14.—Ney's corps, 12,000 of which laid down their arms, defeated by the Ruſſian general Millamdovitſh, Nov. 17.—At Berezina, the conteſt terminated in the capture by Witgenſtein of a French diviſion of 8800 men, Nov. 28.—Near Wilna, a French column was deſtroyed by Platoff, when a general and 1000 priſoners were taken, Dec. 11.

1813.—Concordat ſigned between pope Pius VII. and Buonaparte, at Fontainbleau, Jan. 25.—At Bejar, in Spain, the French were defeated by general Hill and the allied Spaniards, Feb. 20.—At Lunenburg, the French were defeated by the united army of Ruſſians and Pruſſians, with the loſs of general Moramd, 100 officers, and 2200 privates, and two pieces of cannon, April 2.—At Fort George, on the Niagara, the Britiſh were defeated by the Americans, May 27.—At Vittoria, the French, under Joſeph Buonaparte, were defeated by lord Wellington and the allied Spaniards, June 21.—Pyrenées, Soult was defeated, with immenſe ſlaughter, by lord Wellington and the Spaniards, July 28.—St. Sebaſtian was taken by ſtorm, by general Graham, July 31.—Before Dreſden, the allied army of Auſtrians, Ruſſians, and Pruſſians, was defeated by the French, Auguſt 28.—At Toplitz, the French were defeated by the allied Auſtrians, Ruſſians, and Pruſſians, Aug. 30.—At Dennewitz, the French were defeated with great loſs by the Crown Prince of Sweden, Sept. 8.—At a Moravian village on the Thames in Canada, the Britiſh were defeated by the Americans, Oct. 5.—At Mockero, a deſperate conflict occurred between the French and the allied army of Auſtrians, Ruſſians, and Pruſſians, the place having been taken and re-taken five times, terminating in a defeat of the French, Oct. 11.—Before Leipſic, a ſecond general engagement took place, the reſult of which was, a loſs to the French of 10,000 men, in killed, wounded, and priſoners, with 63 pieces of artillery, and the deſertion of 17 German battalions, Oct. 18.

1814.—At Rothiere, the French, under Napoleon, were defeated by the allied Ruſſians and Pruſſians, with the loſs of 3000 priſoners, and 26 pieces of cannon, Feb. 21.—Bourdeaux entered by lord Wellington, March 12.—At Tarbes, Soult was defeated by lord Wellington, March 20.—Paris entered by the emperor of Ruſſia, at the head of his troops, March 31.—Buonaparte renounced, for himſelf and heirs, the throne of France, and accepted the Iſle of Elba for his retreat, April 5.—The ſtates of Parma, Placentia, and Gueſtella, conferred on Maria-Louiſa by treaty, April 5.—At Toulouſe, the French were defeated by lord Wellington, April 10.—Buonaparte embarked for Elba, April 28.—Treaty of Paris ſigned by the miniſters of the allied ſovereigns for the protection of France, May 30.—Pope Pius VII. returned to Rome, and reſumed his functions in May.—The emperor of Ruſſia, with the king of Pruſſia, prince Blucher, and other illuſtrious perſons, entered London amidſt great rejoicings, June 8.—Inquiſition of Spain reſtored by Ferdinand VII. July 21.—A grand jubilee on celebrating the peace, and the centenary of the acceſſion of the houſe of Brunſwick, Aug. 1.—Tuſcany, after having been ceded to Buonaparte in 1807, reſtored in 1814.—Waſhington, in North America, taken by the Britiſh, and the principal buildings deſtroyed by fire, Aug. 24.—Hackney chariots licenſed in London, not to exceed 200.

1815.—Buonaparte quitted Elba, and landed at Cannes, March 1.—King of Candy depoſed, and the ſovereignty veſted in Great Britain, March 2.—Buonaparte arrived at Fontainbleau, March 20.—Treaties for the maintenance of the treaty of Paris, between England, Ruſſia, and Pruſſia, ſigned at Vienna, March 25.—Buonaparte aboliſhed the ſlave trade, March 29.

—Potosi evacuated by the royalists and entered by the Buenos Ayres army, under general Rondeau, April 5. —Florence evacuated by the Austrians, and entered by the Neapolitans, April 6.—Battle of Waterloo, in which the whole French army, with Buonaparte in command, was defeated by the English and Prussians, with immense slaughter, June 18. (See WATERLOO.) —Buonaparte retired to Paris after his defeat at Waterloo, June 20; and abdicated in favour of his son, June 23.—Paris evacuated by the French and occupied by the allied army, July 3.—Louis XVIII. restored to Paris, and resumed the government, July 8. —Buonaparte failing to sail from Rochfort to America, surrendered himself to captain Maitland of the Bellerophon, July 15.—Army of the Loire, under generals Suchet and Davoust, submitted to the government of Louis XVIII. July 16.—Bourdeaux submitted to the government of Louis XVIII. July 14.—Buonaparte transferred at Torbay from the Bellerophon to the Northumberland, and sailed for the island of St. Helena, decreed by the allied sovereigns to be his residence for life, Aug. 8. — And arrived thither, Oct. 16.— The Museum of the Louvre was dismantled by the allied sovereigns of the treasures of art which had been lodged there in consequence of the depredations of Buonaparte. His pillage in Italy, which was conveyed to Paris, consisted of 66 pieces of sculpture, and 47 capital paintings. Among the former, were the following chef-d'œuvres;—the Apollo, the Antinous, the Adonis, the Dying Gladiators, the Laocoon, the Two Sphynxes, and the Tomb of the Muses. Among the latter, were the principal paintings of Raphael, Perugino, Guerchino, Annibal Carracci, Guido, Titian, and Correggio. In the national library were reposited a MS. of Josephus's Antiquities on papyrus, a MS. Virgil of Petrarch, with notes in his hand-writing, and 500 of the most curious MSS. which were in the library of the Vatican.

1816.—Treaty with the Nepaulese in India, ratified March 15. — Princess Charlotte of Wales married to the prince of Saxe-Cobourg, May 12, the annual sum of 60,000*l. per annum* having been previously settled upon him by parliament.—Declaration of independence of the representatives of the United Provinces of South America in general congress, published at Montevideo, July 19.—Genoa transferred to the king of Sardinia.—Lotteries prohibited, on account of their immoral tendency, by the grand duke of Hesse, October.

1817.—Inhabitants of Chili restored to freedom by the Buenos Ayres army under general San Martin in February.—A revolutionary insurrection in Pernambuco in March.—Above 600 petitions for parliamentary reform, presented by sir Francis Burdett, strewed the floor of the house of commons, March 4.—The measure for repealing the penal laws against Catholics, which had been negatived in the house of commons by 213 against 109, June 1, 1810;—and again by 146 against 83, and in the house of lords by 121 against 62, in 1811;—and again in the former house by 300 against 215, and in the latter by 174 against 102, in 1812;—and again in the former house by 251 against 247, May 13, 1813;—and again in the same house by 228 against 147, and in the house of lords by 86 against 60, in 1815;—and again in the house of commons by 172 against 141, and in that of the lords by 73 against 69, in 1816;—and again in the former house by 245 against 221, and in the latter by 142 against 90, April 1817.—A bill admitting Catholics to promotion in the army and navy passed June 1817. —Loan of twelve millions advanced to the French government by English merchants.

VOL. VIII.

CHRYSOPRASE. See MINERALOGY, *Addenda*.

CHUDLEIGH, l. 3, *r.* contains, by the return of 1811, 370, &c.; l. 14, *r.* being 1832.

CHUKOTSKIJA, for TSCHUTSKI *r.* TCHUKSTSKIJA.

CHUMLEIGH, l. 10, *r.* by the return of 1811 is 282, of inhabitants 1340.

CHURCH-STRETTON. In 1811, the township contained 100 houses, and 398 persons; *viz.* 184 males, and 214 females.

CHURDER, signifies, in India, a staff-bearer, or an attendant on a man of rank. He waits with a long staff plated with silver, announces the approach of visitors, and runs before his master, proclaiming aloud his titles.

CHUSISTAN, l. 14, add—Chusistan, or Kuzistan, the ancient Susiana, is now divided between the territories of the Chab Sheikh, and those that form the government of Shuster. The former extend from the banks of the Tab to the conflux of the Karoon and Abzal, and from the shore of the Persian gulf to a range of hills which skirt the valley of Ram Hormuz to the south. This country, though watered by the Karoon and the rivers Zab and Jerahi, does not abound, as some travellers have asserted, in grain, rice, and dates; the greatest part of it consisting in vast sandy plains and morasses, wholly destitute of cultivation. The most fertile parts are those in the environs of Dorak, the capital, and on the borders of the Hafar and Shat-ul-Arab, which produce dates and rice, and scanty portions of wheat and barley. The northern and western parts of the country afford tolerable pasturage, and here the wandering tribes pitch their tents. The principal towns are, Dorak, Ahwaz, Endian, Mashoor, Goban, and Jerahi. Dorak, or more properly Felahi, is situated in low marshy ground, on the banks of two of the branches of the Jerahi. The walls of mud are two miles in circumference, sixteen feet thick, and flanked with round towers. The majority of the inhabitants, amounting to about 8000, prefer living in the suburbs, under the shade of the date-trees. Dorak is the residence of the Sheikh, who has in it a miserable palace. Its manufacture is the abba, or Arabian cloak, which is exported in great numbers all over Persia and Arabia. Ahwaz, or Ahouas, formerly a flourishing city, and capital of a province of the same name, is reduced to a wretched town, containing 600 or 700 inhabitants, situated on the banks of the Karoon, 48 miles S. of Shuster. Endian lies in N. lat. 30° 18′, 20 miles from Zeitoon, and 72 from Dorak, occupying both banks of the Tab, and nearly two miles in circuit. This town trades with Bassora and Behaban, and has a population of between 4000 and 5000 souls. Mashoor lies half way between Endian and Dorak, in the desart, and two miles from the sea, containing about 700 persons, trading with Bassora and the Arabian coast. The revenues of the Chab Sheikh amount to five lacs of piastres, or about 50,000*l.* sterling, and he can bring into the field 5000 horse and 20,000 foot. The territories attached to the government of Shuster constitute the finest portion of Susiana. M'Kinneir's Persian Empire.

CHYAZIC ACID, in *Chemistry*. See CYANOGEN.

CHYLE, and CHYME, *Chemical Properties of*. These have

have been already defcribed under DIGESTION, and we have here only to notice briefly the late experiments of Dr. Marcet and Dr. Prout on the fubject. Thefe gentlemen were furnifhed by Mr. Aftley Cooper with fpecimens of chyle and chyme taken from different dogs, fome of which had been fed on vegetable and others on animal food. Their experiments coincide almoft exactly in every refpect, fo that it will be neceffary only to mention Dr. Marcet's refults. 1. The fpecific gravity of the ferous portion of chyle appears to be between 1021 and 1022, whether formed from vegetable or animal food. 2. The quantity of folid refidue, comprehending both faline and animal matter, left by the evaporation of chyle at the heat of boiling water, may be generally ftated to vary between 50 and 90 parts in 1000. 3. The quantity of faline matter appears to be about 9 parts in 1000, being the fame proportion of falts which is found in all other animal fluids. 4. The chyle from vegetable food appears to yield, by analyfis, about three times as much charcoal as that from animal food. 5. The chyle from animal food is much difpofed to putrefy, and generally begins to undergo that change in three or four days; while that from vegetable food can be kept for weeks, or even fometimes for months, without undergoing putrefaction. 6. The coagulum of chyle is more inclined to putrefy than the ferous part. 7. The chyle formed from animal food alone is always milky; and in ftanding, an unctuous white creamy fubftance collects on the furface: its coagulum is opaque, and has a pink hue. 8. The chyle from vegetable food is commonly tranfparent, or nearly fo, like common ferum. Its coagulum is nearly colourlefs, like an oyfter, and no creamy fubftance rifes to the furface. 9. The principal ingredient of the animal matter of chyle is albumen; but befides albumen, chyle, efpecially when derived from animal food, contains globules of an oily fubftance, which bears a ftrong refemblance to cream. 10. By the deftructive diftillation, chyle gives firft a liquor impregnated with carbonate of ammonia, and afterwards a heavy fixed oil. The chyle from animal food yields a greater proportion of both thefe products, but the refidue, whatever the mode of analyfis be, contains lefs charcoal than the chyle from vegetable food. Iron is readily detected in the refidue of chyle, mixed with the falts and carbonaceous matter. 11. Chyme from vegetable food yields much more folid matter than any other animal fluid, though it appears to contain rather lefs faline matter. 12. Chyme contains albumen. 13. It yields about four times as much charcoal as chyle from vegetable food. 14. Neither chyle nor chyme contains any gelatine.

Dr. Prout afcertained the curious fact in different animals, that albumen never exifts in the ftomach, even when the food is perfectly digefted, but that an albuminous principle is formed the moment it enters the duodenum and comes in contact with the bile. He was alfo induced to conclude, that this albuminous principle becomes more abundant, and more perfectly albuminous, the nearer it approaches the fanguiferous fyftem, fo that it feems to undergo important changes between the inteftines and thoracic duct. See Med.-Chir. Tranf. vol. v. and Annals of Medicine and Surgery, vol. i.

CICCA, *dele* See TERME at the clofe.

CICUTA. Annex—See CONIUM.

CIGOLI, *r. Ludovico* CARDI.

CIMEX, col. 2, l. 35, add—This offenfive creature was in a great degree unknown in the days of our anceftors. Its origin is traced to the year 1670, when it was imported among the timber ufed for rebuilding the city of London after the great fire of 1666; but it was known at a much earlier period than this, though it was much lefs common than it is at prefent. A circumftance is mentioned by Mouffat, which proves that thefe infects were known at Mortlake, in Surry, in the year 1583. They live entirely by fuction, employing for this purpofe their fharp and fine trunk or probofcis, which lies in a ftraight direction beneath the breaft. Like the gnat and fome other infects, they probably infufe fome quantity of irritating fluid into the wound they make before they fuck the blood of the animal, which they attack, as the fwelling is often very confiderable, and attended with fevere itching. In winter they conceal themfelves behind the walls, wainfcot, and in other neglected places; and on return of warm weather they emerge from their concealment. Mr. Baker fays, in his "Microfcope made eafy," that the bug is one of the beft fubjects for exhibiting a microfcopic view of the circulation of the blood.

CIMOLIA, *dele* PIPE-CLAY.

CINCHONA, *Chemical Properties of.* Vauquelin fome time ago publifhed a fet of comparative experiments on all the different fpecies of cinchona which he could procure, in order to determine, if poffible, how far they differ from each other, and what the conftituents are on which their virtues depend. They may be divided into three diftinct fets.

1. Thofe whofe infufions precipitate the infufion of nutgalls, but not that of glue.

2. Thofe whofe infufions precipitate glue, but not the infufion of nutgalls.

3. Thofe whofe infufions precipitate glue, nutgalls, and tartar emetic.

The following Table exhibits the effects of the different re-agents upon all the barks tried. It is difficult, however, as Dr. Thomfon has remarked, to determine, in all cafes, the real name of fome of the fpecimens, as Vauquelin has not given us the botanical name.

Barks.	Precipitate by Glue.	Precipitate by Tannin.	Precipitate by Tartar Emetic.
Yellow bark -	white	——	copious
Quinquina of Santa Fé	reddifh	copious	——
Grey quinquina -	white	copious	white
Quinquina gris canelle	brown	——	——
Red quinquina -	red	——	yellowifh-white
Grey quinquina -	white	yellow	yellowifh-white
Quinquina gris plate	——	——	——
Cinchona pubefcens	——	yellow	yellowifh-white
Cinchona officinalis	——	yellow	——
Cinchona magnifolia	copious	——	——
Quinquina pitton vrai	——	copious	copious
Barks brought from Peru by Humboldt.			
Quinquina of Loxa	copious	copious	copious
Quinquina, white, of Santa Fé - -	——	——	——
Quinquina, yellow, of Santa Fé -	——	copious	copious
Quinquina, red, of Santa Fé - -	copious	——	——
Quinquina, yellow, of Cuença -	——	——	——
Quinquina, ordinary	copious	copious	copious
Infufion of nutgalls	copious	——	yellow-white
Oak bark - -	copious	——	——
Cherry-tree bark -	——	——	——

It is very probable, that feveral fpecimens in the above Table are duplicates, though we have no means of afcertaining this with certainty. All the above barks produced a green colour with iron, and moft of them produced a green precipitate with that metal.

The fubftance which precipitated tannin was brown, of a bitter tafte, and lefs foluble in water than alcohol. It precipitated tartar emetic, but not glue. It refembled the refins in fome refpects, though it gave out ammonia when diftilled. Upon the whole, thefe experiments, though they eftablifh the fact that differences exift among the various fpecies of cinchona, throw very little light upon the nature of their active ingredient or its mode of operation.

CINCINNATI, *dele* l. 9 and 10, and after paper, add —The number of public buildings, or dwellings, is from 1300 to 1400; of inhabitants, in 1810, 2540, and in 1817, 8000, all whites; the laws of Ohio prohibiting flavery, and even the fettlement of free negroes, in the ftate, except in certain cafes. About 400 houfes are built of ftone or brick, many of which are three ftories high, and in a fuperior ftyle. The public edifices are of brick. Numerous manufactures are already eftablifhed, and a very extenfive commerce is carried on by river navigation with Pittfburg, New Orleans, and all the weftern ftates; and by waggons with the interior country. The manners and drefs of the inhabitants refemble thofe of the Englifh. Cincinnati is faid to be the border of the weftern world, and will probably be the largeft city in America at no very diftant period. Forty years ago it was the refort of Indians; and the whole furrounding country was a wildernefs, full of wild beafts and favages.

CINNAMON Stone. See Mineralogy, *Addenda*.

CIONE, Orgagna, *dele*.

CIPHER, col. 36, l. 35, for fyllables *r.* letters.

CIRCAR. At the clofe, add—*Circar* denotes generally the head of affairs, or the ftate and government, as well as the great divifion of a province. It is alfo a name ufed by Europeans in Bengal to fignify the Hindoo writer and accountant, employed by themfelves or in the public affairs.

CIRCLE, col. 5, l. 27 from the bottom, for 7854 *r.* 1571.43. Col. 6, l. 3, *Plate* I. add—*of Aftronomical Inftruments*. Col. 68, l. 5 from the bottom, for cannot be *r.* cannot but be.

CIRENCESTER, col. 3, l. *penult.* By the return in 1811, the borough of Cirencefter contained 902 houfes, and 4540 perfons; *viz.* 2030 males, and 2510 females: 207 families being employed in agriculture, and 526 in trade and manufactures.

CISTOTOME. See Cystotomy.

CITRIC Acid, in *Chemiftry*. This acid has been lately analyfed by Gay Luffac and Thenard, and ftill more recently by Berzelius. The refults obtained by thefe able chemifts differ confiderably, which are partly to be afcribed to the prefence of water in the acid analyfed by Gay Luffac. (See Analysis *of Organized Subftances.*) The following Table exhibits thefe refults.

	Hydrogen.		Carbon.		Oxygen.
Gay Luffac	6.330	+	33.811	+	59.859
Berzelius	3.800	+	41.369	+	54.831

If we confider the numbers of Berzelius as moft accurate, citric acid may be fuppofed to confift of two atoms hydrogen, four of carbon, and four of oxygen, and the weight of an integrant atom will be 72.5. Dr. Thomfon, however, is difpofed to confider another atom of hydrogen, or three atoms, to be prefent in citric acid, which fuppofition he ftates will render the weight of its integrant atom more accordant with the beft analyfes of the citrates.

CLACKMANNAN. Add—In 1811, the parifh of Clackmannan contained 693 houfes, and 3605 perfons; *viz.* 1657 males, and 1948 females.

CLACKMANNANSHIRE. By the returns of 1811, this fhire contained 1995 houfes, and 12,010 perfons; *viz.* 5715 males, and 6295 females: 280 families being employed in agriculture, and 893 in trade and manufactures.

CLADIUM, in *Botany*, from κλαδος, *a twig*, alluding to its habit.—Browne Jam. 114. Brown Prodr. Nov. Holl. v. 1. 236.—A genus founded on *Schoenus Marifcus* of Linnæus. (See Schoenus.) This plant grows in the Weft Indies and New Holland, as well as in Europe. Mr. Brown, who defines thirteen New Holland fpecies, gives the following

Eff. Ch. Glumes imbricated every way, one or two-flowered; the outer ones empty. Germen without briftles or fcales underneath. Style deciduous, without a joint at the bafe. Nut naked and fmooth, with a fmooth kernel.

CLADONIA, from its *twiggy* habit, a name given by Hoffmann to a tribe of Lichens, now funk in Cenomyce; fee that article.

CLAIBORNE, in *Geography*, a county of Eaft Tenneffee, having 4798 inhabitants, of whom 327 are flaves.—Alfo, a town of Miffiffippi territory, in Adams' county, containing 1538 inhabitants, of whom 14 are flaves.

CLAIR, a county of the Illinois territory, containing nine townfhips, and 5007 inhabitants, of whom 40 are flaves.

Clair, *St.* Add—It is a town of Butler county, having 1180 inhabitants.—Alfo, a town of Columbiana county, in the fame ftate, having 1003 inhabitants.—Alfo, a townfhip of Pennfylvania, in Alleghany county, containing 3080 inhabitants.

CLARCKIA, in *Botany*, fo named by Mr. Purfh, in honour of general Daniel Clarck, the companion of the late governor Lewis, in his botanical travels.—Purfh 260.—Clafs and order, *Octandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Onagræ*, Juff.

Eff. Ch. Calyx four-cleft, tubular. Petals four, haftate. Four filaments without anthers. Stigma in four dilated lobes. Capfule inferior, of four cells.

1. C. *pulchella*. Elegant Clarckia. Purfh n. 1.—On the Kooſkooſky and Clarck's rivers. *Governor Lewis*. Biennial, flowering in June. *Stem* erect, a foot or more in height, round, leafy, flightly branched upwards. *Leaves* fcattered, feffile, linear, entire, fmooth, an inch or two long. *Flowers* axillary, folitary, fomewhat ftalked, large and handfome, of a fine purple or rofe colour. *Petals* in three equal, abrupt, fpreading lobes. *Anthers* only four, involute. *Stigma* pale yellow, in four broad, rounded, petal-like lobes.

CLARE, in Suffolk. By the returns of 1811, the parifh contained 253 houfes, and 1170 perfons; *viz.* 591 males, and 579 females.

CLAREMONT, l. 6, *r.* 2094.—Alfo, a town of Maffachufetts, in Hampfhire county, having 987 inhabitants.

CLARENDON, a townfhip of America, l. 4, after contains, infert—1797.

CLARKE. Add—The county contains 10,981 inhabitants, of whom 2695 are flaves; and the town has 538 perfons, including 239 flaves.

CLARKSBURG. Add—Alfo, a town of Maffachufetts, in Berkfhire county, having 231 inhabitants.—Alfo, a county of Georgia, whofe town is Athens, containing 2405 inhabitants, of whom 30 are flaves: its town contains 134, including 4 flaves.

CLASSIFICATION *of Animals*, &c. l. 33, infert —For the claffes of animals, formed from a knowledge of the

the internal ſtructure and according to the Linnæan ſyſtem, ſee NATURAL HISTORY. Col. 2, l. 42, *r.* a ſtrong cervical, &c.; l. 62, *dele* from Man to education, l. 65. Col. 3, l. 23 from bottom, after ant-eaters, inſert—; Col. 4, l. 33, for ſpecies *r.* animals. Col. 5, l. 29, for divided *r.* decided. Col. 6, l. 15, for and *r.* or of. Col. 7, l. 11, for when *r.* where.

Page 5, under DIGITATA, col. GENERA, l. 3, for Uomlatus *r.* Wombatus, and for *Womlat* r. *Wombat.* Col. SUB-GENERA, l. 26, for *Scalope* r. *Aquatic Shrew*; l. 35, for *Rinolphus* r. *Rinolophus*; l. 54, *r.* Myrmecophaga. *Dele* l. *ult.*

Page 6, col. GENERA, l. 13, *dele Grampus;* l. *penult. r. Touyou.*

Page 7, col. FAMILIES, l. 2, *r.* Alectorides. Col. GENERA, l. 9, *r.* Otis. Col. FAMILIES, under PASSERINÆ, l. 1, *r.* CRENIROSTRATÆ; l. 2, *r.* DENTIROSTRATÆ; l. 3, *r.* PLENIROSTRATÆ; l. 4, *r.* CONIROSTRATÆ; l. 5, *r.* SUBULIROSTRATÆ; l. 6, *r.* PLANIROSTRATÆ; l. 7, *r.* TENUIROSTRATÆ. Col. GENERA, l. 7, *r. Momot;* l. 13, after Oriolus, inſert—Buphaga...Beef-eater; l. 26, *r.* Trochilus, and alſo in next column.

Page 8, col. FAMILIES, l. 1, *r.* CURVIROSTRATÆ; l. 2, for or denticulated *r.* and cellular interiorly—and LEVIROSTRATÆ. Col. SUB-GENERA, for Kakatoe *r.* Cacatua; for Ara *r.* Macao. Under GRALLATORIÆ, col. FAMILIES, *r.* CURVIROSTRATÆ, LEVIROSTRATÆ, TENUIROSTRATÆ, PRESSIROSTRATÆ, and BREVIROSTRATÆ. Under ANSERINÆ, col. FAMILIES, *r.* SERRIROSTRATÆ, LONGIPENNÆ, and BREVIPENNÆ. Col. SUB-GENERA, after Alca, inſert—Torda, and remove Aphenodyta—*Manchot* to this column.

Page 9, col. GENERA, after Vultur, inſert—Gypætos, and after Falco, Secretarius—*Secretary.* Col. SUB-GENERA, *dele* l. 3 and l. 9. Under CHELONIA and *Families*, l. 2, *r.* Fluviatilia. Under SAURIA, col. GENERA, l. 3, *r.* Tupinambis; l. 4, Uroplatus; l. 5, Lophyrus; l. 7, *r. Guana;* l. 10, *r.* Chameleo; l. 13, Anolius; l. 16, Chalcides; after Seps, add—Bipes and Chirotes.

Page 10, under BATRACHIA and FAMILIES, for Anoura *r.* ECAUDATA; and for DELOURA *r.* CAUDATA. Under PISCES, col. ORDERS, l. 3, *r.* CHISMOPNEOSI, TREMATOPNEOSI, and OPHICHTHYOIDES.

Page 11, *r.* TREMATOPNEOSI; in the ſame column, *r.* CHISMOPNEOSI. Under TELEOBRANCHIATI, l. 4, after fins, add—which are joined. Under GENERA, *r.* Lepidogaſtrus. Ovoides, MOON-FISH.

Page 12, under FAMILIES, *r.* PANTOPTERI and PEROPTERI. Under GENERA, *r.* Notopteres. Under THORACICI, col. 1, *r.* nearly as high as long. Under GENERA, *dele* l. 2; *r.* Enoploſus, Acanthopodus, Chryſoſtoſus, Capros, Achirus.

Page 14, col. GENERA, *r. Centropome,* Gomphoſus, Oſphronemus, Pogonias, Hologymnoſus, Dipterodon, Coryphænoidon, Prionotus, Periſtedei, Stiophorus.

Page 15, under GENERA, *r.* Anloſtomus, Ompolk, Macropteronotus, Hypoſtomus, Cheilodactylus, Gaſteroplancus, Serra Salmo, *Sun-fiſh,* Synodus, Stylophorus.

Page 16, *r.* OPHICHTHYOIDES. Under GENERA, Murenoblenna, Ocypodes, Leucoſia, Galatæa, Penæus, Phronima; l. 11, for nervules *r.* nervures; l. 12, for ceiled *r.* coiled.

Page 16, TESTACEA. Col. GENERA, *r.* Ozolus. Under OCTOPODA, *r.* diſtinct and ſmall; jaws wanting, or formed in pincers, claws, or as a ſucker.

For SUCTARIA *r.* ACARIDES.
Aceras.
Trombidium.
Hydracna.
Leptus.
Atoma.

Under POLYPODA, FAMILIES, *dele* much, and inſert—MYRIOPODA for LONGIFORMIA; and in l. *ult. dele* body of an oval figure, and inſert—QUADRICORNIA for OVIFORMIA.

Page 17, *r.* HEXAPODA. Under GENERA, *r.* Bombylius, Stomoxys, Rhingia, Stratyomis; after Ceria, Midas, Cerochetus.

Page 18, col. 1, l. 1, *r.* croſſed; and again, l. 2, under FAMILIES, *r.* FRONTIROSTRA and PLANIPENNATA. Under GENERA, *r.* Promecopſis, Cercopis, Aleyrodes.

Page 19, under FAMILIES, *r.* APIARIA CHRYSIDEA. Under GENERA, Eulophus.

Page 21, under FAMILIES, *r.* Sternuxa, Mollipennata. Under GENERA, *r.* Bembidio, Clivina, Hyphydrus, Cebrio, Throſeus, Ptilinus, Necrophorus, Drilus.

Page 22, col. 1, *r.* hard; antennæ. Col. 2, *r.* often moniliform. Under FAMILIES, ANGUSTIPENNATA and SOLIDIPENNATA. Under GENERA, Lagria, Zonitis, Serropalpus, Celopus, Horia, Sarrotrium, Boletophagus, Aniſtoema, Eurychera, Akis, Sepidium, Zophoſis.

Page 23, under FAMILIES, l. 2, *r.* CYLINDRIFORMIA. Under GENERA, Oxyſtoma, Trogoſita, Cerambyx, Attelabus for Spondilis; *dele* Donacia, Necydalis for Melorchus, Clythra. In SUPPLEMENTARY TABLE, col. 2, after pediculated, inſert a;—Under ORDERS, *r.* COLEOPTERA.

Page 24, under SUB-ORDERS, *r.* PTEROPODA, GASTEROPODA. Under GENERA, after Clio, inſert—Cymbulia; *r.* Pneumodermon, after it, inſert—Helicina; *r.* Eolidia, after it, inſert—Glaurus; after Limax, inſert—Onchidium; after Sigaretus, inſert—Pleurobranchus, Dollabella, Parmacella; after Patella, inſert—Capulus; after Crepidula, inſert—Emarginula; *r.* Natica, *r.* Monodon; after Planorbis, inſert—Limnea; after Helix, inſert—Janthine, Phaſianella.

Page 25, under SUB-ORDERS, *r.* APODA; under GENERA, after Thalia, inſert—Botryllus; *r.* Anodontes; *r.* Pholas, and *dele* Cyrtodaria.

Page 26, under SUB-ORDERS, *r.* SETEGERI. Under GENERA, after Aphrodita, inſert—Amphinoma; after Dentalium, inſert—Arenicola; *dele* Faſciola, *Fluke; r. Animated Hair; r.* Scolex, and after it, inſert—Lernea, Nemertes. Under ACTINOIDEA, col. GENERA, *r.* Siponculus, *Siponcule;* after Actinia, inſert—Lucernaria; after Rhizoſtoma, add—Ceſtum, *Venus's girdle,* Diphyſas, Porpita, Velella, Phyſalia, Phyſſophora; *dele* the SUB-GENERA.

Page 27, *dele,* in l. 1, able to change from one place to another. Under GENERA, after Hydra, inſert—Coryna, Criſtatella, Pedicellaria; *r.* Pennatula, Vibrio-vibrio, Volvox-volvox.

CLAUDIO, refer to GELEE' *Claude,* and *dele* GALLIE.

CLAUSENBURG. See COLOSVAR.

CLAY, in *Geography,* a county of Kentucky, containing 2398 inhabitants, of whom 141 were ſlaves in 1810.

CLAY-STONE. See MINERALOGY, *Addenda.*

CLEAR CREEK, in *Geography,* a townſhip of Fairfield county, in Ohio, containing 1126 inhabitants.

CLEARFIELD, a county of Pennſylvania, containing a town of the ſame name, which in 1810 had 875 inhabitants. —Alſo, a townſhip of Butler county, in Pennſylvania, containing 288 inhabitants.

CLEARING, denotes a method adopted by the city bankers for exchanging the drafts on each other's houſes, and ſettling the differences. In purſuance of this method, at half-paſt three o'clock in the afternoon, a clerk from each banker attends at the clearing-houſe, where he brings all the drafts on the other bankers which have been paid into his houſe during the courſe of the day; and he depoſits them in their proper drawers (a drawer being here allotted to each banker): he then credits their accounts ſeparately with the articles which they have againſt him as found in his drawer. Balances are then ſtruck from all the accounts, and the claims transferred from one to another, until they are ſo wound up and cancelled, that each clerk has only to ſettle with two or three others, and their balances muſt be immediately paid either in caſh or Bank of England notes. Such drafts as are paid into a banker's too late for clearing, are ſent to the houſes on which they are drawn to be *marked*, which is underſtood as an engagement that they will be paid the next day. Kelly's Cambiſt.

CLEAVELAND, in *Geography*, a town of Cayhoge county, in Ohio, having, in 1810, 547 inhabitants.

CLERGY, col. 5, l. 44. By 41 Geo. III. c. 63. no perſon ordained a prieſt, or deacon, or being a miniſter of the church of Scotland, ſhall be capable of being elected to ſerve in parliament as a member of the houſe of commons. Such perſon's election ſhall be void; and if after his election he ſhall be ordained a prieſt, &c. he ſhall vacate his ſeat; and if he ſit or vote as a member of the houſe, he ſhall forfeit 500*l.* for every day in which he ſhall ſit or vote; provided ſuch proſecution be commenced within twelve calendar months after ſuch penalty ſhall be incurred. L. 54, after canon law, add—But now by 43 Geo. III. c. 84. certain proviſions of 21 Hen. VIII. are repealed, and other proviſions made in lieu thereof; and it is enacted, that after the paſſing of this act (7th July 1803) ſpiritual perſons againſt whom no action ſhall have been brought under the recited act are indemnified; and contracts which would have been good after paſſing this act are valid notwithſtanding that act; and proceeding may be ſtaid under certain conditions. And any ſpiritual perſon may take to farm to himſelf or to any perſon or perſons, to his uſe, by leaſe, grant, words, or otherwiſe, for term of life or of years, or at will, any meſſuage, manſion, or dwelling-houſe, with or without orchards, gardens, and other appurtenances, although not in any city, borough, or town, notwithſtanding the ſaid firſt recited act or any other.

And it ſhall alſo be lawful for any ſpiritual perſon, having or holding any donative, perpetual curacy, or parochial chapelry, not having ſufficient glebe or demeſne lands annexed to or in right of or by reaſon of his benefice or cure, or chapelry, or for any ſtipendiary curate or unbeneficed ſpiritual perſon, with the conſent in writing of the biſhop of the dioceſe, to take to farm to himſelf, or to any perſon to his uſe for a limited number of years, any farm or farms, lands, tenements, or hereditaments, that may under all the circumſtances appear to ſuch biſhop proper to be taken by ſuch ſpiritual perſon, for the convenience and accommodation of his hoſpitality only, without being ſubject to any pains, penalties, or forfeitures, under the ſaid firſt recited act or any other: provided that nothing herein contained ſhall extend to authoriſe any non-reſidence of ſuch ſpiritual perſon.

CLERMONT, a county of America, l. 5, *r.* 1810, 9965.

CLIFFORD, a townſhip of Luzerne county, in Pennſylvania, having 675 inhabitants.

CLINTON, l. 12, *r.* 1810, 8002; l. 13, of whom 29 are ſlaves.

CLINTON, col. 2, l. 21, after Hallowell, add—containing 1030 inhabitants.—Alſo, a county of Ohio, containing 2674 inhabitants.—Alſo, a townſhip of Knox county, in Ohio, including 714 inhabitants.—Alſo, a town of Georgia, in Jones' county, containing 6023 inhabitants, of whom 13 are ſlaves.

CLITHEROE. In 1811 this borough contained 299 houſes, and 1767 perſons; *viz.* 826 males, and 941 females.

CLITOMACHUS, l. 2, for Carthage *r.* Athens.

CLOCK. In col. 53, l. 18 from bottom, we have referred to PYROMETER for the deſcription of Troughton's new inſtrument, by which he tries the compenſation of his tubular pendulums; but on application both then and recently made to him for permiſſion to deſcribe it, we were informed that this inſtrument has not yet been completely finiſhed, and conſequently not deſcribed by him. We can, however, now give our readers ſome idea of its principle and conſtruction without a drawing. The pendulum is ſuſpended vertically in an encloſed box of wood, made faſt to a wall, and heated with lamps placed within; then a horizontal metallic bar, about thirty inches long, has one of its ends inſerted through the ſide of the box into a hole made in the centre of oſcillation of the ball, while the middle of it is ſupported by a ſhort bearing-piece driven into the wall, and projecting a few inches therefrom: on the remote end of this bar, a micrometer-ſcrew is fixed, that adjuſts a delicate ſpirit-level, borne by it; ſo that whenever the interior end of this horizontal bar is depreſſed by the elongation of the pendulum, the bubble runs to the exterior end of its tube, and indicates the quantity of elongation by its run, as meaſured by the micrometer during its re-adjuſtment; and on the contrary, when a contraction takes place in the pendulum, the bubble runs to the interior end; but when it remains ſtationary, on the application of heat to the pendulum, it is conſidered that the compenſation is perfectly adjuſted. Two thermometers are placed at a diſtance from each other in the box, and are viewed through ſlips of glaſs inſerted in the front of the box near the top and bottom, to ſhew that the heat is equally diffuſed; and thus the expanſion of any ſimple rod may be taken, while the apparatus is removed ſufficiently from the heat applied within the box, while the leaſt quantity of expanſion may be aſcertained, without danger of error, by means of the micrometrical level. It is hardly neceſſary to remark, that when a ſimple rod has its expanſion thus aſcertained in different degrees of temperature, its inferior end muſt reſt on the inner end of the horizontal bar, while its ſuperior end muſt be preſſed upwards againſt a pin in the wall inſtead of being ſuſpended; in which caſe, a counterpoiſe muſt be placed on the horizontal bar near the level, to hold the vertical rod up to its bearing. The peculiar advantage of trying the final adjuſtment of a pendulum of Troughton's conſtruction for compenſation after it has been brought to time, is, that the ſpring by which the pendulum is ſuſpended is *included* in the determination of the total reſult of all the contrary expanſions; which cannot be ſaid of any other method, except that which reſults from actual experience, in obſerving the variations of rate at oppoſite ſeaſons of the year, which is a tedious method, accompliſhed only at the expence of much obſervation and loſs of time after each new adjuſtment.

CLOCK-MAKING, col. 2, l. 13 from bottom, for radii *r.* diameters.

CLOWES, l. 2, for fifteenth *r.* ſixteenth.

CLUNCH. This is alſo a name given to Stourbridge clay, which lies at a great depth in the earth, under the bed of coal: it is a grey clay, of a ſandy nature, and better adapted for making large crucibles and fire-brick than perhaps any in Europe. Parkes's Eſſ. v. i.

CLUPEA ALOSA, col. 2, l. 39, for it is not of *r.* it is one of.

CLYSTERS, in *Farriery*, are of great uſe in allaying many acute complaints to which horſes are ſubject; and Mr. Clark recommends for this purpoſe ſimple clyſters of warm water or thin water-gruel. The inſtrument which he he prefers for administering clysters is a simple bag or ox-bladder, holding two or three quarts, tied to the end of a wooden pipe about fourteen or fifteen inches long, and an inch and a half in diameter where the bag is tied, and tapering to the extremity, where the thickness should suddenly increase, and be rounded off to the point as smooth as possible. The hole through the pipe may be made sufficiently large for admitting the end of a common funnel, by which the liquor may be poured into the bag. Mr. Clark recommends the following clysters for the several purposes to which they are applied. An *emollient* clyster may be composed of two or three quarts of the water-gruel, 6 oz. of coarse sugar dissolved in the gruel, and the same quantity of olive-oil added to it. For a *laxation* clyster, he directs two or three quarts of thin water-gruel, 8 oz. of Glauber's salt (or common salt), and 6 oz. of olive-oil. For a *purging* clyster, he recommends 2 oz. of senna, two quarts of boiling water, the senna being infused and the liquor strained off, with the addition of syrup of buckthorn and common oil, of each 4 oz. An *anodyne* clyster may be prepared with one pint of the jelly of common starch, or infusion of linseed, and 1 oz. or about two table-spoonsful of tincture of opium. For a *nutritive* clyster, he directs three quarts of thick water-gruel well boiled; and in some cases milk-gruel might be substituted with advantage. For a *diuretic* clyster, in cases of strangury, or obstructions of the seminary passages, he recommends 1 oz. of castile soap dissolved in two quarts of warm water, and the addition of 2 oz. of Venice turpentine, previously beaten up with the yolks of two eggs.

COACHES, Hackney, col. 4, line 8 from bottom, add — By statute 55 Geo. III. c. 159. s. 2. the commissioners are empowered to license hackney chariots: and by an act passed July 11, 1817, the holders of licences may drive either a coach or a chariot under the same licence; provided that they do not at the same time drive more than one, which is to be expressed in the licence, under a penalty of 10*l.* or revocation of the licence.

COAL, col. 13, l. 3 from bottom, for 2 92 Grey, &c. *r.* 21 92 Grey, &c. Col. 20, l. 12, for easterly *r.* westerly.

COALBROOK, or Colebrook Dale, in *Geography*, a township of Berks county, in Pennsylvania, containing 792 inhabitants.

COBALT, col. 7, l. 6 from bottom, for or *r.* on.

Cobalt, in *Chemistry*, the name of a metal. Some circumstances omitted in their proper place require to be mentioned here.

The specific gravity of pure cobalt, according to Tassaert, is 8.5384; according to Lampadius it is 8.7. It melts at about 130° of Wedgwood's scale, and is not capable of being volatilized by any degree of heat we can excite. Like iron, it is attracted by the magnet, and according to Wenzel is capable of being converted into a magnet, precisely similar in its properties to the common magnetic needle.

There are two oxyds of cobalt, the protoxyd or *blue*, and the peroxyd or *black* oxyd.

The protoxyd dissolves in acids without effervescence, and seems to form the basis of most of the salts of cobalt. According to Rothoff, it is composed of

Cobalt	-	-	-	100
Oxygen	-	-	-	27.36

Proust found the proportion of oxygen considerably less, that is to say, only 19.8 with 100 of the metal; and Klaproth still less, or about 18.0. If, with Dr. Thomson, we consider Rothoff's analysis most entitled to confidence, the weight of the atom of cobalt will be 36.25.

When the protoxyd of cobalt, newly precipitated from an acid, is dried by heating it in the open air, it assumes a flea-brown colour, which gradually deepens till it becomes black. This is the peroxyd of cobalt. It dissolves with effervescence in muriatic acid, and a great quantity of chlorine is evolved. From the experiments of Rothoff, it appears that this oxyd is composed of

Cobalt	-	-	-	100
Oxygen	-	-	-	36.77

Hence it appears to be composed of two atoms cobalt, and three of oxygen; and on this supposition, the weight of its atom will be 102.5.

COCALICO. Add—containing 4024 inhabitants.

COCAMA, *r.* see Maynas.

COCCINELLA, l. 39, add—These insects are commonly known under the name of lady-birds. The C. 7-punctata, or that of a 7-spotted body, makes its appearance in the advanced state of spring and middle of summer, and in every field and garden. One of the most beautiful of the English species is C. 18-punctata of Linnæus, which is little more than half the size of the common red bead, and is of a bright yellow colour, with numerous (generally 18) black specks.

COCCIUM, l. 4, *r.* Ribchester.

COCCOLITE. See Mineralogy, *Addenda*.

COCHIN-CHINA, col. 8, l. 11 from bottom, for winged *r.* wing. Col. 10, l. 12, for men *r.* women.

COCKBURNE, l. 2, for Grafton *r.* Coos. Add—It contains 142 inhabitants.

COCKE, a county of East Tennessee, containing 5154 inhabitants, of whom 436 are slaves.

COCKERMOUTH, l. 40, *r.* 2964; l. 41, *r.* 602.

CODORUS. Add—It contains 1975 inhabitants.

COELACHNE, in *Botany*, from κοιλος, *empty*, and αχνη, *a husk*, alluding to the inflated glumes.—Brown Prodr. N. Holl. v. 1. 187.—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eff. Ch. Calyx of two nearly equal, very blunt, tumid valves, two-flowered. Florets of two valves, without awns; the uppermost stalked, female. Nectary of two scales. Stigmas feathery. Seed unconnected, cylindrical, acute at each end.

1. C. *pulchella*. Found by sir J. Banks, in the tropical part of New Holland. A little smooth slender *grass*, resembling a diminutive *Briza*, very remarkable for the smaller, or imperfect, *floret* being female, not male.

COFFEE, col. 13, l. 1, *r.* 49, and 98; l. 15, *r.* 100. Col. 14, l. 29, *r.* 43.

COHASSET, l. 3, *r.* 994.

COINAGE, col. 2, l. 4 from bottom, *Plate* III. *fig.* 1. *Miscellany*.

COIT's Gore, in *Geography*, a town of Franklin county, in Vermont, having 193 inhabitants.

COITSVILLE, a township of Ohio, in the county of Trumbull, having 429 inhabitants.

COKE, *Sir* Edward, l. 3, *r.* Micham.

COLBERT, John Baptist, l. 16, *r.* XIV.

COLCHESTER. In 1811, the borough of Colchester contained 2111 houses, and 12,544 persons; 5400 being males, and 7144 females: 480 families employed in agriculture, and 1152 in trade and manufactures.

Colchester, in America, l. 7, add—containing, in 1810, 2697

2697 inhabitants, of whom 7 are ſlaves; l. 10, add—containing 657 inhabitants.

COLCHICUM, col. 2, add—See Phil. Tranſ. for 1817, pt. ii. p. 262; and for MEADOW *r.* SAFFRON.

COLDINGHAM. In 1811 the pariſh contained 462 houſes, and 2424 perſons; 1174 being males, and 1250 females.

COLDSTREAM. In 1811, the pariſh contained 397 houſes, and 2384 perſons; 1103 being males, and 1281 females.

COLEBROOK, l. 2, for Grafton *r.* Coos; l. 6, add—containing, in 1810, 325 inhabitants; l. 10, add—In 1810, it contained 1243 inhabitants.

COLEBROOKEA, in *Botany*, ſo named, by the writer of this, in honour of Henry Thomas Colebrooke, eſq., chief judge in the courts for the natives of Bengal, a practical and accompliſhed botaniſt.—Sm. Exot. Bot. v. 2. 111.—Claſs and order, *Didynamia Gymnoſpermia.* Nat. Ord. *Vitices*, Juſſ.

Eſſ. Ch. Calyx-teeth five, becoming feathery awns. Seed ſolitary, briſtly. Limb of the corolla unequally five-lobed.

1. C. *oppoſitifolia.* Oppoſite-leaved Colebrookea. Sm. as above, t. 115.—Leaves oppoſite.—Found by Dr. Buchanan, by road ſides in Nepaul. A downy, ſlightly aromatic, *ſhrub*, with ſtalked, elliptic-lanceolate, ſerrated *leaves*, and terminal, aggregate, whorled *ſpikes*, of innumerable minute white *flowers*.

2. C. *ternifolia.* Three-leaved Colebrookea. Roxb. Corom. v. 3. 40. t. 245.—Leaves three or four in a whorl.—Native of Myſore. The *leaves* are narrower and more drooping; the *ſpikes* much ſmaller than in the foregoing. Dr. Roxburgh ſays the *germens* are four, ſometimes all perfected; the *flowers* aggregate, with many common *bracteas.*

COLEFORD. In 1811, this tything in Newland pariſh contained 253 houſes, and 1551 perſons; 849 being males, and 702 females.

COLERAIN, l. 2, add—containing 834 inhabitants; l. 20, add—Alſo, a townſhip of Bedford county, in Pennſylvania, containing 1847 inhabitants.—Alſo, a townſhip of Belmont county, in Pennſylvania, containing 471 inhabitants.—Alſo, a town of Roſs county, in Ohio, having 846 inhabitants.

COLERAINE, l. 3, *r.* and in 1810, 2016 inhabitants.

COLESHILL. In 1811, this pariſh contained 330 houſes, and 1639 perſons; *viz.* 789 males, and 850 females: 119 being employed in agriculture, and 196 in trade and manufactures.

COLICA, or COLIC, in *Farriery*, a diſeaſe to which brute animals are ſubject; for which Mr. Taplin recommends a ball made of the following ingredients; *viz.* 1 oz. of pulverized aniſeeds; ½ oz. of mithridate; ginger and grains of paradiſe, of each, in powder, 2 drs.; oil of aniſeed and oil of juniper, of each, 1 dr.; and ſyrup *q. ſ.*: the ball to be given, according to the ſtate of the diſeaſe, every two, four, or ſix hours. In ſome caſes, a mixture of ginger, pepper, aniſeeds, &c. ½ oz. of each, with the addition of a little brandy or gin, will give relief. In flatulent colics, a ball made of 6 drs. or 1 oz. of Venice turpentine, purified opium from 1 to 1½ dr., 1 dr. of oil of aniſeeds, and 2 drs. of powdered ginger, may be adminiſtered every two, three, or four hours, according to the urgency of the ſymptoms.

COLLEMA, in *Botany*, κολλημα, *a glutinous ſubſtance.* The name appears to have originated with Hill, and is adopted by Hoffmann and Acharius. The latter has only admitted this genus in his two laſt publications.—Ach. Lichenogr. 129. t. 14. f. 8—11. Syn. 308. Sm. in Engl. Bot. 2284. (Parmelia, ſect. 6; Ach. Meth. 221.)—Claſs and order, *Cryptogamia Algæ.* Nat. Ord. *Lichenes.*

Eſſ. Ch. Shields orbicular, horizontal, nearly ſeſſile, ſuperficial, with a gelatinous acceſſory border.

Acharius reckons up ſixty-four ſpecies. Theſe are the gelatinous Lichens of former authors. (See LICHENES, ſect. 1.) They are all more or leſs pulpy, olive-green, or blackiſh; their *fronds* various in form and direction. Twenty-three Britiſh ſpecies are figured in Engl. Bot.

COLLEMORE'S RIDGE, in *Geography*, a townſhip of America, in the diſtrict of Maine, and county of Lincoln, having 40 inhabitants.

COLLETON, a diſtrict of South Carolina, containing 26,359 inhabitants, of whom 5238 are ſlaves.

VOL. IX.

COLLISION, col. 9, three laſt lines, for Z *r.* E.

COLNE. By the return of 1811, this townſhip contained 990 houſes, and 5336 perſons; *viz.* 2531 males, and 2805 females: 58 families being employed in agriculture, and 928 in trade and manufactures.

COLONSAY, l. 21, By the laſt act 786, and the number of houſes 138.

COLOUR, col. 12, l. 11, for cold *r.* colour. Col. 22, l. 18, for tube *r.* tub.

COLOURING *Principle of the Blood, Chemical Properties of.* See BLOOD.

COLUBER, l. *ult. r.* See HYDRUS.

COLUGO, in *Zoology.* See GALEOPITHECUS.

COLUMB, ST. In 1811, the pariſh of St. Columb major contained 410 houſes, and 2070 perſons; *viz.* 988 males, and 1082 females: 225 being employed in agriculture, and 108 in trade, &c.: and the pariſh of St. Columb minor contained 229 houſes, and 1126 perſons; *viz.* 550 males, and 576 females: 147 families being employed in agriculture, and 72 in trade, &c.

COLUMBA, a military order, l. 2, *r.* 1379. Add—See DOVE.

COLUMBIA, l. *ult. r.* in 1810, 32,390 inhabitants, of whom 879 are ſlaves; l. 8, add—It contains 11,242 inhabitants, including 5980 ſlaves; l. 11, add—It contains 518 inhabitants; l. 31, add—It contains 2057 inhabitants.—Alſo, a townſhip of Cayuhaga, in Ohio, having 205 inhabitants.

COLUMBIANA. Add—It contains 17 townſhips, and 10,878 inhabitants.—Alſo, a town of Kentucky, in Adair county, containing 175 inhabitants, of whom 45 are ſlaves.—Alſo, a diſtrict of America, containing 24,023 inhabitants, of whom 5395 are ſlaves.

COLUMBIUM, *Columbic Acid*, in *Chemiſtry.* See TANTALUM.

COLUMBO, l. 6, *r.* Trincomalee.

COLUMBUS, in *Geography*, a county of North Carolina, containing 3022 inhabitants, of whom 703 are ſlaves.

COLUMNA, l. 10, for eliptic *r.* epileptic.

COLYTON, l. *penult. dele* arms; l. *ult. r.* 343 and 1774.

COMBINATION, col. 2, l. 8, *dele* cc; l. 38, for $\frac{6-1}{2}$ *r.* $\frac{6-1}{3}$.

COMBUSTION, *Theory of*, in *Chemiſtry.* See ACID, and ACIDIFICATION.

COMEPHORUS, in *Ichthyology*, a genus of the apodes, the

the characters of which are, head large, with depressed snout; mouth large, with small teeth; body elongated, compressed, the second dorsal fin surrounded with several long naked rays.

This fish is a genus of Cepede, and referred by Pallas to the genus of callionymus among the jugular fishes. It is a native of the lake Baikal; and from its conformation seems to be capable of swimming swiftly, and of springing out of the water like the flying-fish. See CALLIONYMUS *Baikalensis* of Gmelin's Linnæan system.

COMMIPHORA, in *Botany*, from κομμι, *gum*, and φερω, *to bear*, Jacq. Hort. Schoenbr. v. 2. 66. t. 249, a dioecious octandrous shrub, of which the male only is known, found in Madagascar, and said to produce that kind of elastic gum, of which Fourcroy has given an analysis. More information on this subject is very desirable.

COMMON PRAYER, l. 15, add—2 & 3 Edw. VI.

COMPAGNIE ECOSSOISE. See GENDARMES, &c.

COMPASS, col. 6, l. 37 and 38, *r.* See MAGNETICAL DECLINATION, and MAGNETICAL VARIATION.

COMPENSATION, col. 18, l. 30 from the bottom, for but broader *r.* and narrower.

COMPOSTELLA, l. 2, after capital, insert—(see CORUNNA).

COMPOUNDS, in *Chemistry*, are divided into *primary* and *secondary*.

Primary compounds, according to Dr. Thomson, are those formed by the union of combustibles with the four supporters of combustion, oxygen, chlorine, iodine, and fluorine, and with *cyanogen*. Dr. Thomson also includes under this division certain compounds of combustibles with one another, and with oxygen.

Secondary compounds are those formed by the union of two or more primary compounds. These include the four classes of substances, termed hydrates, salts, hydrosulphurets, and soaps.

COMREE, in *Geography*, a township of Berks county, in Pennsylvania, containing 2017 inhabitants.

CONCORD, l. 10, insert—and had, in 1810, 2396. At the close, add—Also, a town of Grafton county, in New Hampshire, containing 1126 inhabitants. At the close of the next article, add—containing 677 inhabitants; l. 4 from the bottom, after upwards, add—By the census of 1810, the number of inhabitants was 1633.

CONCORD, in Delaware county, add—containing 1061 inhabitants.—Also, a township of Miami county, in Ohio, having 679 inhabitants.—Also, a town of Ross county, in Ohio, containing 1277 inhabitants.

CONCORDIA. Add—Also, a county and parish of the territory of Orleans, containing 2895 inhabitants, of whom 1581 are slaves.

CONEMAUGH, a township of Indiana county, in Pennsylvania, containing 1167 inhabitants.—Also, a township of Somerset county, in the same state, having 381 inhabitants.

CONESTOGA. Add—containing 1506 inhabitants.

CONEWAGO, a township of Adams county, in Pennsylvania, having 531 inhabitants.

CONEWANGO, a township of Warren county, in Pennsylvania, having 448 inhabitants.

CONGLETON, 2 last lines, *r.* at 944, the inhabitants at 4616, of whom 2023 are males, and 2593 females.

CONGOON, a port of Laristan, in Persia, containing 6000 or 7000 inhabitants, and having an excellent roadstead, where a frigate may ride safely in the most tempestuous weather, and good water and fire-wood be procured.

CONIC SECTIONS, *Lemmas.* Def. l. 1, *r.* A E; l. 2, D and B; l. 3, A B. Cor. l. 1, *r.* A E in B; l. 3, B and D and in B; l. 5, D B and *d* E.

CONNECTICUT. At the close, add—See UNITED STATES.

CONNELSVILLE, l. 2, for Washington *r.* Fayette; l. 4, *r.* 93 inhabitants.

CONNIOTT, a township of Pennsylvania, in the county of Crawford, having 285 inhabitants.

CONON, l. 1, for son *r.* father; l. 2, after Athens, *r.* who died in the year B.C. 393.

CONOPLEA, in *Botany*, Pers. Syn. Fung. 234, an obscure genus of *Fungi*, consisting of compact, rigid, permanent fibres, generally black or brownish, interspersed with powder. Four species are described, found on rotten wood, branches, or leaves.

CONOSTYLIS, from the conical form of the style.—Br. Prodr. Nov. Holl. v. 1. 300. Pursh 224.—Class and order, *Hexandria Monogynia.* Nat. Ord. *Hæmodoraceæ*, Brown.

Eff. Ch. Corolla superior, in six deep equal segments, woolly with branched hairs, permanent. Anthers erect. Style conical, separable into three parts. Stigma simple. Capsule of three cells, bursting at the top, with a triangular central receptacle, and many seeds.

Roots perennial, fibrous. *Stem* scarcely any. *Leaves* sword-shaped, equitant, rough or bristly at the edges. *Stalk* many-flowered, capitate or corymbose, often woolly.

Four species are natives of the south coast of New Holland; and one, *C. americana*, of the pine-barrens of New Jersey and Carolina, bearing *flowers* of a golden yellow, in July. The *germen* is almost entirely superior in this species. *Pursh.*

CONSTRUCTION *of Boats.* The plate referred to under this article has been superseded by *Plate* XIV. *of Naval Architecture;* and for the description of the latter, as far as it relates to BOATS, the reader is referred to the article WHOLE-*Moulding.*

CONVOCATION, col. 3, l. 36, after representatives, add—The summons to the convocation must not be confounded with that which we now mention, though the constituent parts are the same; and by modern usage the assembly of both is supposed to have been on the same day. But the one may be easily distinguished from the other by this difference; *viz.* that the convocation is provincial, and summoned by the metropolitans of Canterbury and York; whence the clause, commonly denominated *præmunientes*, (from its first word,) in the writ to each bishop proceeds from the crown, and enjoins the attendance of the clergy at the national council of parliament.

CONWAY, col. 3, at the close—Population in 1811 was 1053; the number of houses 218.

CONWAY, in America, l. 8, *r.* 1080. Col. 4, l. 1, *r.* 1784.

COOLING *Powers of the Gases.* It is difficult to ascertain the precise conducting powers of gaseous substances, as the cooling of hot bodies in gases is influenced by a variety of circumstances besides their conducting properties. Count Rumford found, that a thermometer cooled nearly four times as fast in water as in air of the same temperature. The same philosopher also found, that rarefaction much diminishes the conducting power of air, and that hot bodies cool slowest of all in a Torricellian vacuum. This subject, however, has been investigated more lately with greater precision by Leslie and Dalton. Mr. Leslie ascertained, that the conducting power of all gases is diminished by rarefaction. He has endeavoured to deduce from his experi-

ments,

ments, that the conducting power of air is nearly proportional to the fifth root of its density. Mr. Dalton, however, has rendered it probable, that it varies nearly as the cube root of its density. Vapours of all kinds, and every thing that has a tendency to dilate air, diminish their conducting powers. The conducting powers of common air, oxygen, and azote, as might be expected, are nearly equal. The conducting power of carbonic acid is rather inferior to that of air, but bodies cool in hydrogen more than twice as fast as in common air; and Mr. Leslie has endeavoured to shew, that the actual conducting power of hydrogen is no less than four times greater than that of common air.

Mr. Dalton's experiments were made with a strong phial filled with the gas to be examined, into which he introduced a delicate thermometer through a perforated cube, and observed the time it took to cool 15° or 20°. The following table exhibits the result of his experiments:

	Time of cooling.
Carbonic acid	112″
Sulphuretted hydrogen, Nitrous oxyd, Olefiant gas	100″+
Common air, Oxygen, Azote	100″
Nitrous gas	90″
Gas from pit-coal	70″
Hydrogen gas	40″

COOLSPRING, in *Geography*, a township of Pennsylvania, in the county of Mercer, having 521 inhabitants.

COOS, in *Ancient Geography*. Add—See Cos.

Coos, in *Geography*. Add—Coos is a county of New Hampshire, containing 24 townships, and 3991 inhabitants.

COPAL. Add—See VATERIA.

COPPER, in *Chemistry*, the name of a metal. Some circumstances omitted in our account of this metal require to be inserted here.

There are two oxyds of copper, the protoxyd of an *orange* or *red* colour, and the peroxyd or *black* oxyd.

The protoxyd was observed by Proust; but Chenevix, who found it native in Cornwall, first accurately described its properties. It may be formed by mixing together 57.5 parts of black oxyd of copper, and 50 parts of copper in a state of powder, formed by precipitating it from muriatic acid by an iron plate. This mixture is to be triturated in a mortar, and put with muriatic acid into a well-stopped phial. Potash dropped into this solution precipitates the oxyd of copper of an orange colour. It may be also formed with much less trouble by adding excess of copper to muriatic acid, and letting the whole remain till the green colour disappears, and the solution becomes dark brown and opaque. In this state, dirty-white crystals like sand are deposited. If potash be added to the brown solution, or a solution of the crystals above-mentioned, the protoxyd is precipitated in abundance. According to Berzelius, this oxyd is composed of

Copper	-	100
Oxygen	-	12.5

Hence the weight of the atom of copper will be 80.

The peroxyd or black oxyd of copper has been already described. It is composed, according to Proust and Berzelius, of

Copper	-	100
Oxygen	-	25

Hence the quantity of oxygen in these two oxyds is as one to two; or the protoxyd may be considered as composed of one atom copper and one of oxygen, and the peroxyd of one atom copper and two of oxygen. From these determinations, the composition and weights of the atoms of the different salts of copper may be accurately estimated.

COPTIS, in *Botany*, from κοπτω, *to divide*.—Salisb. Tr. of Linn. Soc. v. 8. 305. De Cand. Syst. v. 1. 321. Pursh. 390.—Class and order, *Polyandria Polygynia*. Nat. Ord. *Ranunculaceæ*, Juss.

Ess. Ch. Calyx none. Petals five or six, deciduous. Nectaries as many, hooded. Follicles membranous, stalked, beaked, with many seeds.

1. C. *trifolia*. Three-leaved Coptis. Pursh n. 1.—Leaves ternate, obovate. See HELLEBORUS, n. 3.

2. C. *asplenifolia*. Fern-leaved Coptis. Pursh n. 2.—Leaves twice ternate, pinnatifid.—Found by Mr. Menzies, on the west coast of North America, and by Thunberg in Japan, this being actually *Thalictrum japonicum* of that author, and of Willd. Sp. Pl. v. 2. 1303! The *flowers* are greenish.

CORACHIE, in *Geography*, a good sea-port in the country of *Seind*; which see.

CORAL, *Chemical Properties of*. See VERMES.

CORALLORRHIZA, in *Botany*, an old name, alluding to the branching coral-like form of the root.—Hall. Hist. v. 2. 159. t. 44. Brown in Ait. Hort. Kew. v. 5. 209. See CYMBIDIUM.

Ess. Ch. Lip elongated into a spur at the base. Column unconnected. Anther a terminal deciduous lid. Masses of pollen four, oblique.

We do not doubt the propriety of separating this plant, and another of American origin, (see Pursh 593, n. 4.) from *Cymbidium*; but we have some nearly allied *Orchideæ* from Nepaul, which require to be examined before the limits of *Corallorrhiza* can be clearly defined.

CORDILLERAS. Add—The great body of the Cordilleras, as it extends from Quito northward, approaching the gulf of Mexico, and entering the kingdom of New Granada, is divided into three chains, which are almost parallel, and of which the two lateral branches are covered with sand-stone, and other secondary formations, to a very considerable height. The eastern chain divides the valley of the river Magdalena from the great plains that are drained by the Orinoco and its branches. Inclosed by a circle of mountains belonging to this chain is the high valley of Bogota, the bottom of which is no less than 7460 feet above the level of the sea. The waters of this valley are collected by the single stream of Rio de Bogota, which finds its way through the mountains to the S.W. of the town of Santa Fé: the stream where it leaves the valley is about 144 feet wide; it then enters into a rocky channel not more than 40 feet wide, apparently formed, says M. Humboldt, by an earthquake. From this crevice, the river precipitates itself at two bounds to the depth of 574 feet; and after this fall pursues its course to the Magdalena, about 50 miles, still descending with great rapidity, and at the rate of 150 feet to a mile. The natural bridges of Icononzo are on the western declivity of this ridge. The central chain is the highest of the three, and often attains the limits of perpetual snow, and greatly surpasses it in the colossal summits of Guanneas, Baragan, and Quindiu. The western chain separates the valley of Cauca from the province of Choco, and the coasts of the South sea. This is lower than the others, and rises so much as it approaches the isthmus of Panama, that its course can hardly be ascertained. In our ordinary

ordinary maps, there is no trace of the higheft or central chain; and Mr. Arrowfmith's map of America, in 1802, makes the valley of Magdalena occupy the whole interval between the eaftern and weftern chains. The moft difficult paffage of the Andes is that by the mountain Quindiu. It lies through a thick uninhabited foreft, which cannot be traverfed, in the fineft feafon, in lefs than ten or twelve days. The fummit of the pafs is at the prodigious height of 11,499 feet above the level of the fea, and the paffage from ten to fixteen inches in breadth. Humboldt's Refearches, &c. by H. M. Williams, 1814.

CORDYLINE, in *Botany*, an old name of Van Royen's, from κορδυλη, *a club or ftaff*, fuitable enough to the *Dracænæ* and *Yuccæ* to which it was originally applied, and which we prefume are included in the genus which now bears it.—Commerf. in Juff. 41. Brown Prodr. Nov. Holl. v. 1. 280.—Clafs and order, *Hexandria Monogynia*. Nat. Ord. *Afparagi*, Juff. *Afphodeleæ*, Br.

Eff. Ch. Corolla bell-fhaped, in fix equal fegments, deciduous. Filaments inferted into the throat, awl-fhaped, fmooth. Anthers verfatile, cloven at the bafe. Stigma three-cleft. Berry globular, of three cells, with feveral feeds, whofe fcar is bordered. *Br.*

The *ftem* is fhrubby. *Leaves* lanceolate, finely ribbed, elongated. *Panicle* terminal, of numerous, many-flowered, alternate fpikes, with two unequal *bracteas* under each *flower*.

1. C. *cannifolia*. Br. n. 1.—Leaves ftalked, pointed. Clufters divided. Outer bracteas acute, twice as large as the inner, which hardly equal the partial ftalks.—Found by Mr. Brown, in the tropical part of New Holland.

See Dracæna, of which our firft and fecond fpecies belong to this genus.

CORFE-CASTLE, l. 29, *r.* after return—of 1811 was 161, and of inhabitants 744.

CORINTH, a townfhip of America, l. 2, *r.* 1876.

CORINTHIAN Order, l. 8, for convex *r.* concave.

CORN, col. 3, l. 18 from the bottom, *dele* l. 18 to l. 14.

Vol. X.

CORNEA, *Opacities of*. Opacity of the cornea is one of the worft confequences of obftinate chronic ophthalmy. The flight, recent, and fuperficial form of the difeafe is ufually known under the name of nebula; and it is preceded by and attended with chronic ophthalmy. The iris and pupil are difcernible through a fort of cloudinefs, and the patient is not entirely deprived of the power of vifion. The veins of the conjunctiva are greatly relaxed, turgid, irregular, and knotty, which change firft affects their trunks, and then gradually extends to their ramifications near the union of the cornea with the fclerotica, and ultimately to their moft minute branches returning from the delicate layer of the conjunctiva, fpread over the front of the cornea. When this happens, a milky albuminous fecretion begins to be fuperficially effufed in the interfpaces between the red ftreaks, and the fpecks thus produced may cover only a part or the whole of the cornea.

The opacity of the cornea fometimes occurring in violent ophthalmies is effentially different from the nebula, and arifes from a deep extravafation of coagulating lymph in the cellular texture of the cornea, or from an abfcefs between its layers. In the treatment of the nebula, the curative indications are to reftore the varicofe veffels to their natural diameters; and if that be impracticable, to cut off all communication between the trunks of the moft prominent veins of the conjunctiva and thofe on the cornea. The firft object is performed by ufing Janin's ophthalmic ointment, or the ung. hydrarg. nitrati, together with aftringent collyria. The fecond defideratum is fulfilled by the excifion of the fafciculus of varicofe veins, juft at the bafe of the opacity, with a pair of diffecting fciffars and forceps. With refpect to the deeper and more obftinate opacities, which are frequently called *albugo* and *leucoma*, they are confequences of fevere acute ophthalmy, though fometimes the effects of an ulcer or wound of the cornea, when they are commonly known only by the latter appellation.

The recent albugo may fometimes be difperfed by the fame treatment, which is applicable to violent ophthalmy; and when the inflammation has been fubdued, the ung. hydrarg. nitrat. is the beft local remedy for promoting the abforption of the extravafated opaque lymph. The eye may alfo be frequently wafhed with a collyrium, compofed of two fcruples of the muriate of ammonia, and four grains of verdigreafe, in eight ounces of lime-water. The treatment muft be continued three or four months before the cafe is to be abandoned as hopelefs. With refpect to the leucoma arifing from a cicatrix, Scarpa fets it down as abfolutely incurable.

CORNISH, l. 5, *r.* 1810, and 1606. Add—Alfo, a town of York county, in the diftrict of Maine, having 974 inhabitants.

CORNVILLE, a town of America, in the diftrict of Maine, and county of Somerfet, having 504 inhabitants.

CORNWALL, col. 8, l. 31, *r.* 1811; l. 32, *r.* 37,971, and 216,667.

Cornwall, in America, l. 3, *r.* 1279; l. 8, add—containing 1602 inhabitants.

CORO, l. 7, after perfons, add—The little commerce that is carried on is in mules, goats, hides, fheep-fkins, cheefe, &c. obtained from the interior of the country, and more particularly from Carora. At the clofe, *r.* N. lat. 10° 8′ from Paris.

CORSHAM, l. 17, add—By the return of 1811, the number of houfes was 478, and that of inhabitants 2395.

CORTLANDTS, a county of New York, having 8809 inhabitants.

CORUNDUM. See Mineralogy, *Addenda*, and Adamantine *Spar*.

CORUNNA. Add—See Compostella.

CORVUS, col. 2, l. 20, add—The African or Cape raven, defcribed by Le Vaillant, is, according to Dr. Shaw, the only variety worthy of notice.

CORWEN, l. *ult.* *r.* 51 Geo. III. 288 houfes, and 1417 inhabitants.

CORYSANTHES, in *Botany*, from κορυς, *a helmet*, and ανθος, *a flower*.—Brown Prodr. Nov. Holl. v. 1. 328.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx ringent; upper lip vaulted, very large; lower in two linear fegments, combined with the linear petals. Lip dilated, concave. Anther terminal, of one cell, and two connected valves, permanent. Maffes of pollen four. Curious little fmooth plants, each with a fingle *bulb*, one roundifh radical *leaf*, and a large, deep red, folitary *flower*. Nearly related to Lyperanthus *nigricans*; fee that article.

1. C. *fimbriata*. Fringed Helmet-orchis. Br. Terr. Auftr. 78. t. 10.—Lip without a fpur, hooded, fringed.—In fhady places, under rocks, at Port Jackfon. *Br.* Hardly two inches high, its beautiful purple variegated *flower* fubtended

ſubtended by an almoſt orbicular, heart-ſhaped, pointed *leaf.*

2. C. *unguiculata.* Stalked Helmet-orchis. Br. n. 2.—Lip without a ſpur, tubular, dilated and oblique. Hood ſtalked. Flower pendulous.—Found by Mr. Bauer, at Port Jackſon.

3. C. *bicalcarata.* Double-ſpurred Helmet-orchis. Br. n. 3. (Corybas aconitiflorus; Salif. Parad. t. 83.)—Lip tubular, with two ſpurs at the baſe.—Found near Port Jackſon, but, according to Mr. Brown, very rarely, nor does he ſeem to think it has ever been brought alive to England. We received a ſpecimen in ſpirits, from Dr. White, about the year 1793. Mr. Brown's remarks on this ſubject are curious.

COSMEA, a name certainly much improved from *Coſmos* of Cavanilles, Ic. v. 1. 9.—Ait. Hort. Kew. v. 5. 132.—This genus comes next to *Coreopſis*, and we ſhould ſcarcely ſcruple to unite them.

COSMELIA, from κοσμεω, *to adorn*, alluding to its beauty.—Br. Prodr. Nov. Holl. v. 1. 553.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Epacrideæ*, Brown.

Eſſ. Ch. Calyx leafy. Corolla tubular, bearing the ſtamens. Anthers united lengthwiſe to the fringed tops of the filaments. Nectary of five ſcales. Capſule with a central receptacle.

1. C. *rubra.* Found by Mr. Brown, in bogs on the ſouth coaſt of New Holland. An upright *ſhrub*, without ſcars on the denudated *branches. Leaves* ſheathing at the baſe. *Flowers* terminal, bright red, drooping. *Calyx* accompanied by imbricated leafy *bracteas. Br.*

Nearly akin to ANDERSONIA; ſee that article.

COTAISIS. Add—This town, called Cotais or Cotatis, is now an inconſiderable place, inhabited by about 80 Jewiſh, Armenian, and Turkiſh families. Its rivers are extenſive, and it is ſituated on a beautiful and fertile plain.

COTCHUNG. See DERAGUZ.

COTENTIN for CONTENTIN.

COTOPAXI. This is the loftieſt of thoſe volcanoes of the Andes, which in recent epochas have undergone eruptions. Its abſolute height, according to Humboldt, is 18,874 feet; ſo that it is double that of Canigou, and 2600 feet higher than Veſuvius would be if it were placed on the top of the peak of Teneriffe. This is alſo the moſt dreadful volcano of the kingdom of Quito, and its exploſions are the moſt frequent and diſaſtrous. The maſs of ſcoriæ, and the huge fragments of rock thrown out of this volcano, cover a ſurface of ſeveral ſquare leagues; and would form, if they were heaped together, a coloſſal mountain. In 1758, the flames roſe 2900 feet above the brink of the crater. In 1744, the roaring of the volcano was heard on the borders of the Magdalena, a diſtance of 200 leagues. In April 1768, the quantity of aſhes ejected by the volcano was ſo great, that in the towns of Haunbato and Tacunga the inhabitants were obliged to uſe lanthorns in walking the ſtreets at noon-day. The exploſion in January 1803 was preceded by the ſudden melting of the ſnow which covered the mountain. For twenty years before, no ſmoke or vapour had been obſerved to iſſue from the crater; and in a ſingle night, the ſubterraneous fire became ſo active, that at ſun-riſe the external walls of the cone were heated to ſuch a degree as to appear quite naked, and of the dark colour peculiar to vitrified ſcoriæ. At the port of Guayaquil, fifty-two leagues diſtant, Meſſrs. Humboldt and Bonpland heard the noiſe of the volcano day and night, like the continued diſcharges of artillery. In this part of the Andes, a longitudinal valley ſeparates the Cordilleras into two parallel chains; the bottom of this valley is 9843 feet above the level of the ocean, ſo that Chimborazo and Cotopaxi appear no higher than the Col du Geant, as meaſured by Sauſſure. The ſummit of the mountain of Chimborazo is 21,430 feet above the level of the ſea, and therefore a good part is above the circle of perpetual congelation, which, in the latitude almoſt under the line, is ſomewhat higher than the ſummit of Mont Blanc. Humboldt's Reſearches. See VOLCANO.

COTTAGE, col. 13, l. 15 from the bottom, for ſeed *r.* reed.

COVENTRY. By the return in 1811, this city contained 3448 houſes, and 17,293 perſons; *viz.* 8197 males, and 9726 females: 123 families being employed in agriculture, and 3207 in trade, manufactures, and handicraft.

COVENTRY, in America, l. 4, add—containing 1938 inhabitants; l. 6, *r.* 2928; l. 8, *r.* 162; l. 12, add—In 1810 it contained 178 perſons; l. 13, *r.* having 1608 inhabitants.

COUGHING, in *Phyſiology.* See LUNGS.

COUNSEL, col. 2, l. 5, *r.* the king's premier, &c.

COURONNE *des Taſſes*, an apparatus conſtructed by profeſſor Volta, in which he arranges the component parts of the galvanic pile in a different form. (See GALVANISM.) This apparatus conſiſts of a ſet of ſmall glaſſes, placed ſideways of one another, and containing water or ſome ſaline ſolution. Metallic arcs are then procured, having one end compoſed of zinc, and the other of ſilver or copper: theſe arcs are inſerted into the glaſſes in an uniform order; each glaſs having the zinc leg of one arc, and the copper or ſilver leg of another arc immerſed in the fluid. The zinc and copper legs are not in contact, and they are always to be diſpoſed in the ſame ſituation with reſpect to each other: *i. e.* one is always to be at the right-hand, and the other at the left. The pile and this apparatus operate in the ſame manner, and their operation is referred by the profeſſor to his new principle (ſee VOLTAISM), by which he conceived different metals, when placed in contact, to deſtroy the electric equilibrium, or, in his phraſe, to become movers of electricity, producing that electric motion which is ſuppoſed to be the primary and eſſential cauſe of the galvanic action.

COURT, *Univerſity*, col. 2, l. 4, *r.* 14th.

COURUPITA for COURAPITA.

COWBRIDGE. In 1811, the pariſh contained 158 houſes, and 850 perſons; 425 being males, and 425 females.

COW-TAIL RIVER. See WAU-CA-HATCHO.

CRACKS, col. 4, l. 15, for bone *r.* cone.

CRAFTSBURY, in *Geography*, a town of Orleans county, in the ſtate of Vermont.

CRAIL. In 1811, the burgh and pariſh of Crail contained 316 houſes, and 1600 perſons; *viz.* 673 being males, and 927 females.

CRANBERRY. Add—Alſo, a town of Butler county, in Pennſylvania, having 543 inhabitants.

CRANBORNE. In 1811, the pariſh of Cranborne contained 144 houſes, and 816 perſons; *viz.* 429 being males, and 387 females.

CRANBROOK. Add—The pariſh of Cranbrook, by the returns of 1811, has 511 houſes, and 2994 perſons.

CRAVEN, l. 4 and 5, *r.* 12,676, and 5050.

CRAWFORD, a county of Pennſylvania, containing fourteen townſhips, and 6178 inhabitants.

CRAYFORD. In 1811, the pariſh contained 233 houſes, and 1553 perſons; *viz.* 769 being males, and 784 females.

CREAM, *Chemical Analysis of.* See MILK.

CREDITON, l. 8 from the end, *r.* and the hundred contains, by the return of 1811, 2130 houses, and 10,648 inhabitants; l. 5, after extent, add—But the borough of Crediton contains only 425 houses, and 1846 inhabitants.

CREWKERNE, col. 2, l. 4, for 41 *r.* 51; l. 5, *r.* of houses was 589, and of persons 3021, of whom 1346 are males, and 1675 females; 281 families employed in agriculture, and 308 in trade, &c.

CRIBRARIA, in *Botany*, from its perforated structure, Pers. Syn. Fung. 189; one of those beautiful, though minute, genera of *Fungi*, whose *head* is formed of reticulated fibres, enclosing the powdery *seeds*. Persoon reckons up eleven species.

CRICKHOWEL. In 1811, the parish contained 137 houses, and 611 inhabitants. In the hundred of Crickhowel is a Roman encampment, called the Gaer, situated at the extremity of the vale, on a rising ground. The dimensions are much the same with those of Caer-Bannau (see BANNIUM), and it is nearly of a square form. It lies on the Via Julia, which passed in this direction from Caerleon to Caermarthen. We are informed that the old practice of singing carols in the church at cock-crowing, or the earliest dawn of the morning, on Christmas-day, is still continued in the church at Crickhowel; but it merits any other appellation than that of a religious rite.

CRICKLADE, l. 14, *r.* 51; l. 15, *r.* 1939, and 2095; l. 16, 10,403; l. 17, 4894, and 5509; 1483 families chiefly, &c.; l. 18, *r.* 411.

CRISTARIA, in *Botany*, from the wings or *crests* of the aggregate capsules, by which alone it is distinguished from SIDA (see that article).—Cavan. Ic. v. 5. 10. Pursh 453. Sims in Curt. Mag. 1673.—We can hardly assent to the establishment of this genus, its character being entirely artificial, and unaccompanied by any thing discriminative in the habit. The only species mentioned are, 1. C. *glaucophylla*, Cavan. Ic. t. 418. 2. C. *multifida*, which is our SIDA *pterosperma*, the last species but one in that article. 3. C. *coccinea*, Pursh n. 1. Curt. Mag. t. 1673, a native of the dry plains of the Missouri, perennial and hardy in our gardens, adorned with beautiful scarlet *flowers*. 4. C. *betonicifolia*, Cav. as above, 11, which is Malacoides betonicæ folio, &c. Feuill. Voy. v. 3. 40. t. 27.

CROMER. At the close, add—the parish contains, by the returns of 1811, 170 houses, and 848 inhabitants.

CROSBY, a township of Hamilton county, in Ohio, having 981 inhabitants.

CROSS-CREEK. Add—containing 1847 inhabitants.—Also, a township of Ohio, in Jefferson county, having 1152 inhabitants.

CROSS-*Wort*. Add—and VALENTIA.

CROTALUS, col. 3, l. 19, *r.* to have them come, &c.

CROTONOPSIS, in *Botany*, from κροτων, *Croton*, and οψις, *appearance*; but the principle of the name is incorrect, inasmuch as the Greek κροτων is our *Ricinus*, to which the genus in question bears no resemblance; and if the *Croton* of modern botanists be intended, such a comparative appellation is contrary to rule.—Michaux Boreal.-Amer. v. 2. 185. Willd. Sp. Pl. v. 4. 380. Pursh 206.—Class and order, *Monoecia Pentandria*. Nat. Ord.?

Ess. Ch. Male, Calyx in five deep segments. Petals five. Female, Cal. and Cor. like the male. Stigmas divided. Capsule superior, not bursting, with one seed.

1. C. *argentea*. Silvery Crotonopsis. Pursh n. 1. (C. linearis; Michaux 186. t. 46. Willd. n. 1. C. elliptica; Willd. n. 2.)—Native of North America, in sandy ground near the coast, in the Illinois country and on the Missouri, flowering in July. *Pursh.* A slender annual *herb* a span high, with opposite or alternate entire *leaves*, variable in breadth, and loose *spikes* of minute white *flowers*. The pubescence consists of fringed silvery scales, as in *Croton*.

CROUPADE, *r.* See BALLOTADE.

CROW'S NEST, in *Naval Language*, is a kind of box, sufficient to hold a man; generally a cask, fixed near the mast-head, to protect the observer from cold, and enable him to look out for whales, or open pieces of water.

CROYDON. The parish of Croydon, in 1811, contained 1394 houses, and 7801 inhabitants; 3616 being males, and 4185 females: 397 families employed in agriculture, and 662 in trade, &c.

CROYDON. Add—and in 1810, 802 inhabitants.

CROYDON *Canal*, l. 3, *r.* Surry.

CRUCIROSTRA, CROSS-BILL, in *Ornithology*, a genus of birds of the order Passeres; the characters of which are, beak thick and forked; mandibles, when at rest, inversely curved; nostrils small, rounded, situated at the base of the beak; tongue entire. Mr. Stephens, the continuator of Dr. Shaw's Zoology, mentions and describes two species; one of which, or common cross-bill, with a variable red body, quills and tail-feathers brown, beak externally olive-green, and tail forked; the Loxia curvirostra of Linnæus; and the cross-bill with a dull crimson body, wings black, with two white fasciæ, secondary quills white at the tips, and tail black, the Loxia leucoptera of Gmelin, and white-winged cross-bill of Latham and Pennant.

CRUSTS, *Animal, Chemical Properties of.* See VERMES.

CRYPHIA, in *Botany*, κρυφια, *clandestine*, alluding to the concealed corolla.—Br. Prodr. Nov. Holl. v. 1. 508.—A genus, of which there is perhaps but one certain species, a small thyme-leaved herb, with solitary axillary flowers, found on the south coast of New Holland, intermediate between CHILODIA and PROSTANTHERA; see those articles. The ringent *corolla* is shut up in the closed two-lipped *calyx*. Possibly the *flowers* were not fully evolved, owing to the climate or season.

CRYPTOCARYA, Brown Prodr. Nov. Holl. v. 1. 402, a genus of the order of *Laurinæ*, resembling the Cinnamon-tree in habit, as well as inflorescence, but differing from *Laurus* in having only two cells in each *anther*, and from the whole order in having the *nut concealed*, (whence the name,) in the enlarged tube of the *calyx*, become closed above it at the top. *C. glaucescens* and *obovata* are natives of Port Jackson; *C. triplinervis* of the tropical part of New Holland.

CRYPTOSTEMMA, κρυπτος, *concealed*, and στεμμα, *a crown*, the scaly crown of the seeds being involved in wool.—Brown in Ait. Hort. Kew. v. 5. 141.—Class and order, *Syngenesia Polygamia-frustranea*. Nat. Ord. *Compositæ*, Linn. *Corymbiferæ*, Juss.

Ess. Ch. Receptacle cellular. Seed-down chaffy, concealed by the entangled wool of the seed. Calyx imbricated.

1. C. *calendulaceum*. Marygold Cryptostemma. Ait. n. 1. (ARCTOTIS calendulacea; see that article, sp. 1. Jacq. Hort. Schoenbr. v. 2. 16. t. 157.)—Radiant florets undivided. Leaves pinnatifid, toothed; downy beneath.

2. C. *hypochondriacum*. Divided-rayed Cryptostemma. Ait. n. 2. (Arctotis hypochondriaca; see sp. 1, β. Willd. Sp. Pl. v. 3. 2348.)—Radiant florets in three or five deep segments. Leaves lyrate, downy.

3. C. *runcinatum*. Dandelion-leaved Cryptostemma. Ait. n. 3.—Radiant florets in three or five deep segments. Leaves runcinate; toothed; downy beneath.

All the species are natives of the Cape of Good Hope, rather tender annuals in our gardens, of no ftriking appearance.

CRYPTOSTYLIS, κρυπτος, *concealed*, and στυλις, *a fmall pillar.*—Brown Prodr. Nov. Holl. v. 1. 317.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx-leaves and petals linear, fpreading. Flower reverfed. Lip erect, feffile, dilated, undivided; concave at the bafe, concealing the very fhort column. Anther parallel to the ftigma, fubtended at each fide by a lobe of the column.

Bulbs cluftered. *Leaves* few, radical, ftalked, flat. *Flowers* in a terminal fpike, dull red, fcentlefs.

1. C. *longifolia*. (Malaxis fubulata; Labill. Nov. Holl. v. 2. 62. t. 212,) found at Port Jackfon, as well as on the fouth coaft;

2. C. *ovata;* and 3. C. *erecta;* are the only defcribed fpecies.

CRYSTAL, col. 5, l. 19, for changed *r.* charged.

CRYSTALLOGRAPHY is the fcience which treats of the form and ftructure of cryftals. (See CRYSTAL.) The beautiful fymmetrical forms, which frequently occur in the deep receffes of mines or the fiffures of alpine rocks, cannot fail to ftrike the moft common obferver with furprife. Amidft the almoft infinite variety which they prefent, it will be found, on a more attentive examination, that there are certain definite forms which fome minerals moft frequently affume, and which are rarely, if ever, feen in other minerals. Hence we might at firft be led to infer, that cryftallization depends on the definite action of fome general law, by which the conftituent parts of each mineral fpecies are invariably arranged in the fame form. When, however, it is farther difcovered that, befides the prevailing forms peculiar to certain minerals, the fame fpecies are not unfrequently cryftallized in a variety of diffimilar forms, and that minerals of different fpecies often prefent cryftals of the fame form, we muft retract our firft conclufion, and fhall be more difpofed to believe that the mineral kingdom has not yet emerged from a chaotic ftate, or that the reign of order is fubject to the invafion of difturbing forces, the extent of which we have no means of afcertaining.

The labours of a few enlightened and indefatigable philofophers have recently removed, in a great degree, the obfcurity in which this department of fcience was involved, and have demonftrated that the laws by which the particles of the minuteft cryftal are arranged act with unerring precifion, and are not lefs regular than thofe which govern the motions of the planets or the folar fyftem.

Under the article CRYSTAL (which fee), fome account is given of the difcoveries of Romé de Lifle, Bergmann, and Haüy. The latter has ably demonftrated that all the varieties of cryftalline forms are reducible to a few fimple primitive forms, fome one of which may be regarded as the nucleus of each cryftal, however complicated its form may be. The conftituent particles, or what Haüy denominates the *integrant molecules*, of all cryftals, may be conceived as arranged in rows, and a number of thefe rows as forming thin laminæ or plates. When thefe laminæ are parallel with all the faces or planes of a cryftal, they may be removed without changing the form of the cryftal; but if the laminæ divide in any other direction than that which is parallel to the faces, a change of form will be produced by every divifion, until at laft we obtain a nucleus which is divifible in a direction parallel to its fides.

In the former cafe, the primitive form is the form of the cryftal itfelf. Thus, if a cubic cryftal be divifible only by laminæ parallel to its fix fides, we may continue diminifhing the magnitude of the cryftal, as long as mechanical divifion is poffible without any change of form.

When the laminæ of a cryftal divide in any other direction than parallel to its faces, it is called a fecondary form or derivative cryftal.

The primitive forms of all cryftals which have been hitherto examined are fix.

1. The parallelopiped, bounded by fix planes, the oppofite planes being parallel. This includes the cube, and varieties of the rectangular prifm, the oblique angular prifm, and the rhomboid.

2. The octahedron. This is a double four-fided pyramid. When the triangular faces are equilateral, it is called a regular octahedron. (*Plate* VII. *fig.* 27, *Cryftallography.*) There are, befides this, other varieties of the primitive octahedron, in which the pyramids are longer or fhorter than the regular one, or have a rhomboidal bafe, or a rectangular bafe, longer in one direction than the other.

3. The regular tetrahedron (*Plate* VII. *fig.* 13.) is bounded by four equilateral triangles.

4. The regular hexahedral prifm, or equiangular fix-fided prifm, *fig.* 5.

5. Rhomboidal dodecahedron, bounded by twelve equal rhombs, *fig.* 12.

6. The pyramidal dodecahedron, confifting of two fix-fided pyramids joined bafe to bafe, *fig.* 14.

The primitive forms which moft frequently occur are, the parallelopiped and the octahedron. The tetrahedron and dodecahedron are very rare as primitive forms, though common as the fecondary forms of cryftals.

The divifion of fecondary cryftals by fections in the direction of the laminæ is, in fome minerals, effected with facility; in others, the joints are indiftinct, and require the cryftal to be heated and plunged into cold water to make them vifible. The direction of the laminæ is frequently rendered obvious by turning a mineral flowly round in the funfhine, when the reflections from the internal parts will fhew its ftructure. Where no joints are difcoverable, Haüy determines their direction and the form of the primitive nucleus by conjecture, from the appearances offered by the fecondary cryftal.

The actual mechanical diffection of an hexahedral cryftal of calcareous fpar, and the extraction of the primitive, is reprefented in *Plate* II. *figs.* 17, 18, 19, 20, *Cryftallography*, and is defcribed under the article CRYSTAL; but the references are erroneoufly made to *Plate* I. *figs.* 1, 2, 3, 4, 5.

The primitive nucleus is reprefented *fig.* 21, E A, O I, G H, A K. The difcovery of it in this cryftal was firft made by the abbé Haüy in looking over the cabinet of M. Defiance, a hexahedral prifm of calcareous fpar having fallen from the group to which it was attached. M. Defiance made him a prefent of it. One of the corners being off from the bafe, he attempted to detach fimilar corners from the other angles, and after fome time he fucceeded in bringing to view its rhomboidal nucleus. This firft fuggefted to him the theory of the ftructure of cryftals. The fituation of the primitive form, in another variety of calcareous fpar, called the dog-tooth fpar, may be feen *Plate* II. *figs.* 22 and 23. This is defcribed under the article CRYSTAL, with the mode of extracting the nucleus; but the reference is erroneoufly made to *Plate* I. *figs.* 6 and 7. The angles of the primitive rhomb are invariably 105° 5′ and 74° 55′. Rhomboids of calcareous fpar, indeed, occur with different angular admeafurements; but thefe are fecondary cryftals, and will not fplit in directions parallel to their faces. One of thefe, with the primitive nucleus, is reprefented represented *fig.* 24. The theory of their formation will be explained as we proceed.

The primitive form is not in all cafes the ultimate form to which cryftals can be reduced; for where the primitive form is not a parallelopiped, the divifion parallel to the faces neceffarily produces forms which muft vary from that of the primitive nucleus. See *Plate* V. *fig.* 56. *Cryftallography*, which reprefents the bafe of a fix-fided prifm, divided by fections parallel to each of its fides: from this divifion the ultimate form which we can ever obtain muft be that of a triangular prifm; for by carrying on the divifion we may conceive the particles to become fmaller, but their form will remain the fame. We have therefore obtained the form of the integrant molecule. In parallelopipeds, the form of the nucleus is alfo that of the molecule itfelf.

Thus in the cube, as reprefented *Plate* IV. *figs.* 48 and 49, the divifions parallel to the fides produce a feries of fmaller cubes, which muft be the form of the integrant molecule. In fome inftances, the primitive forms themfelves admit of divifion by laminæ not parallel to that of the faces, from which muft neceffarily refult a new form of the integrant molecule.

Plate II. *fig.* 26. reprefents a primitive rhomboid of tourmaline A E, O I, G H, A K, which is divifible both in the direction of its fix faces and in that of the fhort diagonals A O, I A′, A K. Thefe latter fections divide the rhomboid into fix tetrahedrons, which are reprefented furrounding the nucleus. Haüy conceives, that by thefe divifions, we obtain the form of the integrant molecule, or of the ultimate integrant atom of the cryftallized mineral. It has been obferved, that no proof can be advanced to confirm this conjecture, except the impoffibility of altering the form, how far foever we carry the divifions; and the obvious confequence is, that if thefe divifions be carried far enough, we muft at laft reduce the cryftal to its integrant particles. It is not, however, neceffary to fuppofe, that the conftituent particles themfelves have any other form than that of fpheres; becaufe all the forms of the integrant molecule, which are the tetrahedron, the triangular prifm, and the cube, may be readily conceived to be conftructed with four, fix, and eight fpherical particles, arranged in their forms by cryftalline polarity. It deferves attention, that the forms of the integrant molecule are the moft fimple which can exift among folids with plane furfaces, being bounded refpectively by the fmalleft poffible number of fides, *viz.* four, five, and fix.

If we conceive the integrant molecules to be arranged in rows, and a number of thefe rows to be arranged in the fame planes, they will form laminæ of any conceivable fize. Now by a fucceffion of plates increafing in fize, the magnitude of the primitive cryftal will be increafed; but if thefe laminæ decreafe in extent by one or more rows of particles, the refult will be a change of form, or the production of a fecondary cryftal. Now the laminæ may either decreafe on the edges by one or more rows, or may decreafe diagonally on the angles by a determinate number of rows, or the decreafe may take place in fome intermediate direction. Thefe are called by Haüy, decrements on the edges, decrements on the angles, and intermediate decrements. Sometimes decrements take place at once on all the edges, fometimes upon all the angles, and fometimes only on certain edges and angles. In fome inftances the decrements are uniform, and the fame number of rows decreafe from the different edges or angles. Sometimes the law of decrement varies from one edge to another, or from one angle to the other; and this happens chiefly when the nucleus has not a fymmetrical form, or when it is a parallelopiped, whofe faces differ in the refpective inclinations of their faces, or in the meafure of their angles. In certain cafes, the decrements on the edges concur with thofe on the angles to produce the fame cryftalline form. It happens alfo, that the fame edge, or the fame angle, fometimes undergoes different laws of decrement that fucceed each other; and, finally, there are a great many cafes where the fecondary cryftal preferves faces parallel to thofe of the primitive form, and which combine with the faces produced by the decrement, to modify the figure of the cryftal.

If, in the midft of fuch a diverfity of laws, fometimes acting folitarily, and fometimes in combination upon the fame primitive form, the number of ranges fubtracted were likewife variable; if, for inftance, there were decrements of twenty, thirty, forty, or a greater number of ranges of molecules, of which it is very poffible to conceive, the multitude of forms which might exift in each mineral fpecies would be fufficient to appal the imagination, and the ftudy of cryftallography would prefent an immenfe labyrinth, from which even the affiftance of theory could not extricate the learner.

But the force which produces the decrements of ranges appears to have a very limited action. Generally thefe fubtractions take place by only one or two rows of molecules. None have hitherto been found beyond fix rows; but fuch is the fecundity united with this fimplicity, that were we to confine ourfelves to decrements by one, two, three, and four rows, and to exclude thofe that are mixed or intermediate, we find that the rhomboid is fufceptible of 8,388,604 varieties of cryftallization. Doubtlefs many of thefe varieties do not exift in nature; but there is reafon to expect that difcoveries in the field of inquiry will be made for many years to come.

The tetrahedron and the triangular prifm, when they occur as integrant molecules, are always arranged in fuch a manner in the interior of cryftals, that, taking them in groups of two, four, fix, eight, they compofe parallelopipeds. Thefe parallelopipeds are, by Haüy, named *fubtractive molecules.* They are always fubftituted in the place of tetrahedrons and triangular prifms in confidering the decrements where they produce the fecondary forms.

Decrements of the Edges.—The moft fimple cafe of change of form produced by the fuperpofition of decreafing laminæ, is that which fuppofes ranges of molecules to be taken away on all the edges of a parallelopiped, in a direction parallel to the edges. Yet this cafe, fo fimple in appearance, may give rife to forms of confiderable complexity. Thus the rhomboidal dodecahedron (*Plate* II. *fig.* 27. or *Plate* III. *fig.* 28. *Cryftallography*) may be formed in this way from a cubic nucleus. If the integrant molecule of this fpecies be a cube, it follows that the primitive cryftal E A, O I, and E′ A′, O′ I′, is formed by a congeries of cubes. Suppofe thefe cubes of fuch a fize, that an edge of the primitive cryftal is compofed of a row of feventeen cubes, placed fide by fide, as reprefented *fig.* 29. I O, O E: of courfe each face of the primitive cryftal will be a congeries of 289 fquares, confifting of fo many integrant molecules; and the primitive cryftal or cube will be a congeries of 4913 cubes. Let us fuppofe that a fquare furface or plate, of the thicknefs of one integrant molecule, be applied to every face of cube; but that inftead of being of the fame fize as the face of that cryftal it is lefs by a fingle row of molecules all round; fo that the fides, inftead of containing feventeen little cubes, contain only fifteen each (fee *fig.* 29.); of courfe this fquare will contain only 225 little cubes, inftead of the 289 that form the furface of the primitive cryftal. Upon each of thefe firft plates applied to every face,

face, let another plate be applied fimilar to the firft, but lefs than it by a row of integrant molecules; fo that each fide contains only thirteen fquares, and the whole only 169 fquares. Let fix other plates be applied in fucceffion to each of the faces, decreafing by a row of little cubes all round; fo that the fides confift of eleven, nine, feven, five, three, and one fquares refpectively. It is obvious, that by this procefs we have raifed upon each of fix faces of the cube a four-fided pyramid, the faces of which, inftead of being fmooth, will, by their conftant diminution of bulk, reprefent the fteps of ftairs. If, however, we conceive the molecules to be extremely fmall, and the number of decreafing laminæ to be increafed, the fteps of the ftairs may be fo fmall as to be imperceptible to the eye, in which cafe the furfaces of the pyramids will appear fmooth.

Thefe pyramids having each four faces conftitute twenty-four triangular faces, fo that the cube is converted into a new cryftal. Inftead, however, of having twenty-four faces, the decrements having been equal on each edge, the triangular faces in each adjacent pyramid will be in the fame plane, and form together a rhomb, which will be evident from the infpection of *figs.* 28 and 29; the cube will therefore be converted into a rhomboidal dodecahedron. The cubic nucleus I′ I′, O O′, E E′, *fig.* 29. is reprefented with the pyramids raifed on three of its faces. When complete, it will have the form reprefented in *Plate* II. *fig.* 27. If the decrement had taken place by two ranges on each of the laminæ, when applied to the cube the pyramids would have been lower; and their adjacent faces being no longer in the fame plane, the fecondary cryftal would have terminated in twenty-four diftinct triangles.

In the example given (*fig.* 29.) it will be feen, that as each of the laminæ decreafes by one row on each of its edges, *viz.* one on I O, and another on the inferior row I′ O′, and the fame on the other edges, it is obvious that the pyramid decreafes by two rows in breadth for every row in height; therefore the height will be equal to half the breadth at the bafe.

The terms *decrement in breadth*, and *decrement in height*, are thus explained by Haüy. Decrements in breadth are thofe in which the thicknefs or height of each plate or lamina is only equal to one integrant molecule; and the refult of the decrement is by one, two, three, or more ranges in the direction of the breadth.

Decrement in height implies a decrement of one row in breadth on each of the fucceffive plates; but each of thefe rows may have the thicknefs or height of two, three, or more molecules. In the latter cafe, the decrement is faid to take place by two, three, or more ranges in height.

Thefe two kinds of decrement are often combined together, of which we have an example in iron pyrites with twelve pentagonal faces. (*Plate* III. *fig.* 30.) This variety has a cube for the nucleus, as reprefented *fig.* 31; and may be conceived to be formed, as reprefented *fig.* 32, by decrements of two ranges in breadth in one direction, and by decrements of two ranges in height in the other. The decrements in breadth by two ranges tend to produce a more inclined face than the decrements by two ranges in height; the confequence refulting is, that the cryftal will not terminate in pyramidal points, but in wedges, as is feen at *q p*, *fig.* 32. The ftructure of this cryftal is more particularly defcribed under the article Crystal; but for *Plate* I. Nos. 14, 15, 16. *r. Plate* II. *fig.* 30, 31, 32. *Cryftallography.*

Another example of decrements on the edges is deferving particular attention: it is afforded by that peculiar kind of cryftal of calcareous fpar, commonly called dog-tooth fpar, or which Haüy denominates the metaftatic cryftal. (*Plate* II. *fig.* 22.) In this cryftal, the edges E O, O I, I K, where the two oppofite pyramids join, coincide with the edges of the primitive nucleus, as may be feen in *fig.* 23. The decrements fet out from thefe edges, and do not take place on the other fix edges of the nucleus. Now it is eafy to conceive, that the edges of the plates, laid upon the primitive nucleus, form as many triangles, E *s* O, I *s* O, E *s*′ O, &c. refting upon the edges from which they fet out; and as there are fix in number, there will be twelve triangles, fix above and fix below; and thefe will all be fcalene, in confequence of the obliquity of the edges from which they fet out.

With refpect to the other edges of the plates of fuperpofition, fo far from experiencing any decrement they will increafe; becaufe they muft always remain contiguous to the axis of the cryftal, which is an imaginary line drawn from *s* to *s*. It is from calculation combined with obfervation, that we muft determine the law of decrement on which this dodecahedral form depends. If we fuppofe a decrement by one range, it may be demonftrated, that the two faces produced on each fide of the edge from which the decrement takes place will be in the fame plane, and parallel to the axis of the primitive cryftal, conditions which do not apply to the prefent form. The moft fimple hypothefis is that which fuppofes a decrement by two ranges in breadth. This will be more clear from infpecting *Plate* III. *fig.* 33: it reprefents the upper pyramid of this cryftal, placed on the upper planes of the primitive nucleus, which being partly vifible, admits us to perceive more clearly the progreffive effects of the decrement by two ranges.

Each edge of the nucleus, as K I, I O, O E, is divided into ten; from whence it follows, that each face is an affemblage of one hundred fmall rhombs, which are the exterior planes of fo many molecules. This conftruction requires only eight plates of fuperpofition for each face of the nucleus; and thefe plates being joined to each other, three and three on the edges, which correfpond with the upper edges of the nucleus, form decreafing envelopes, covering each other in fucceffion; the laft of which is compofed of eight little rhomboids. If we confider the pofition of the line E *s*, which reprefents an edge of this pyramid, as it appears to the eye, and E *s*′, fuch as it really exifts, we may obferve that the geometrical fummit of the pyramid *s* is placed a little above the true fummit *s*′; but this difference is imperceptible, on account of the extreme minutenefs of the molecules: and for the fame reafon, the channels or fteps upon the pyramid are not vifible. There are cafes, however, in which the channels may be perceived by the naked eye.

For determining the form of fecondary cryftals by calculation, it is only neceffary to take the decrements at their commencement, in order to have as many planes, which, if we conceive them to be extended until they meet, would form a complete polyhedral cryftal; and in this manner we only confider the initial effects of decrements mathematically, a method more fimple and expeditious than that of reafoning. It is ufeful, however, to explain in detail the ftructure of a cryftal, in fuch a manner as may enable us to arrange a number of fmall folids fimilar to primitive molecules to form a nucleus, in an order conformable to that of nature, and thus to imitate the procefs of cryftallization. We fhall give another example from that variety of calcareous fpar, called by Haüy equiaxe.

This variety, the fecondary cryftal, is a rhomboid, much more obtufe than the nucleus, the greater angle being 114° 18′ 56″. It is reprefented (*Plate* III. *fig.* 34.) furrounding the nucleus. To extract the latter at once, it is only

only neceffary to make fections cutting through the oblique diagonals of the different faces of the fecondary rhomboid. One of the fections, for inftance, that which paffes through the diagonals drawn from *a* to *t*, and from *a* to *u*, and which cuts off the folid angle *z*, coincides with the face *a b*, *d f*, of the nucleus. But there are fix lateral folid angles *z*, *c*, *y*, and *t*, *m*, *u*. We have, therefore, fix fections to make, inclined three and three towards each fummit; and becaufe the upper folid angles alternate with the inferior, the fections which cut them off preferve the fame alternation, and crofs in fuch a manner as to prefent the fix rhomboidal faces of the nucleus.

To conceive the ftructure of this fecondary rhomboid, let us refer to the rhomboidal dodecahedron (*Plate* III. *fig.* 29.) before defcribed. We have feen that by a decrement of one range in breadth on all the edges, there refulted two triangular faces on each edge, which being in the fame plane formed a rhomb, the fhort diagonal of which is I O.

Let us fuppofe, that the nucleus was the primitive rhomb of carbonate of lime (*a b*, *d f*, *fig.* 34.), and that the laminæ of fuperpofition decreafe by one range of little rhomboids fimilar to the nucleus; but the decrements to take place only on the edges *a b*, *a f*, *a n*, which meet at the fummit *a*, and on the oppofite edges, which meet at the oppofite point *a'*. Then inftead of twelve rhombs there will only be fix, of which the fhorter diagonals will coincide with the edges *a b*, *a f*, *a n'*, &c. The other parts of the laminæ of fuperpofition, that is, thofe which are fituated near the lower edges, *b d*, *d f*, *f x*, &c. will not undergo any decrement, but will fuffer variations that will tend to prolong the faces produced by thefe decrements, until they interfect each other. From hence it refults, that the laminæ, inftead of preferving the figure of a rhomb, as would have been the cafe if the decrement had taken place on all the edges, will, as they are further and further removed from the nucleus, pafs fucceffively from the figure of a pentagon to that of a triangle.

Fig. 35. A, *a b*, *d f*, is the face of the fame nucleus or rhomb as in *fig.* 34, and what is faid of this face may eafily be applied to the others. Suppofe this face divided into 81 rhombs, which reprefent the faces of fo many molecules, or 729 in the whole. The firft lamina of fuperpofition, which we apply to the face *a b*, *d f*, will be B, *fig.* 35, in which U *l*, Z' *d*, reprefent the upper face, and C U *l h*, X Z *l h*, the facets of the two upper edges. We muft place this lamina in fuch a manner on the face *a b*, *d f*, that the point *h'* fhall unite with the point *b*, the point A' with the point A, and the point B' with the point B. We fhall perceive immediately, that the two upper ranges of the face *a b*, *d f*, *fig.* 35. A, that is, thefe included between *a b*, A *b*, on one fide, and *a f*, B *h*, on the other, will remain uncovered, the neceffary refult of a decrement by one range of molecules. The lamina B is a pentagon refulting from the fubtraction of the three little rhombs neceffary to complete the rhomb. This fubtraction was required, that the lamina by its figure might aid the effect of the decrement, as will be afterwards explained.

The two ranges of rhomboids on each fide of the lines D *d'*, E *d'*, are added, that the nucleus may be covered and continue to increafe on the edges *b d*, *f d*, A, *fig.* 35, which correfpond with thefe lines. Thefe two ranges being fufficient to fill up the void, it is not neceffary to add fimilar ranges towards the adjacent edges of the laminæ of fuperpofition, applied on the neighbouring faces. The operation will indicate of itfelf what is required in thefe kinds of additions.

The *fig.* C, 35. reprefents the fecond lamina of fuperpofition, which is to be applied to the former in fuch a manner, that the points *i'*, D', E, *d*, fhall unite with thofe which are marked with the fame letters in *fig.* B. As the cryftal will receive another increafe towards the edges, which correfpond with F *d'*, C *d'*, we may conceive that inftead of one range added on each fide D *d'*, E *d*, *fig.* B, it will be neceffary to add two on each of the two lines E *d'*, C *d'*, *fig.* C, 35.

We muft place in the fame manner, in fucceffion, the two laminæ reprefented D and E, *fig.* 34; obferving that the letters marked with an accent in each figure fhall coincide with the fame letters not accented in the preceding figure. Beyond the feries which anfwers to *fig.* E, the laminæ of fuperpofition will ceafe to envelope the lower edges of the cryftal, and will be reduced to fimple triangles, which may be perceived on examining the figures E, F, G, H, whofe pofition will be determined according to the conditions before ftated.

The number of rhomboids which compofe the laminæ being now progreffively decreafing, is reduced at laft to a fingle rhomboid *d'* (*fig.* D, 35.), which being applied on that which is defignated by the fame letter in *fig.* H, will form the fummit of one of the lateral folid angles of the fecondary rhomboid. It will now be feen why the laminæ of fuperpofition take fucceffively pentagonal and triangular faces as they recede from the nucleus. For example, every lamina, detached from the cryftal (*fig.* 34.) by a fection which paffes any where between the angle *z*, and the middle of the lines Z *t*, Z *u*, is neceffarily triangular, and has the fame ftructure as P' *t* R', *fig.* G, 35; namely, it is really furrowed at its bafe, but the ridges are imperceptible on account of their extreme minutenefs.

Decrements on the Angles.—To explain the formation of fecondary cryftals, in many inftances it is neceffary to admit that the decrements take place on the folid angles. The formation of the regular octahedron formed on the cube is reprefented *Plate* III. *fig.* 36. *Cryftallography*, and an account of it given under the article CRYSTAL, but the reference is erroneoufly to *Plate* I. *fig.* 20.

The effect of decrement on the angles by one range of molecules in breadth is explained in the article CRYSTAL, and a reference made to *Plate* I. *fig.* 21, for which fee *Plate* II. *fig.* 21, *Mifcellany*, O I, I' O'; where the face of a cubic nucleus is reprefented as divided into a number of leffer fquares; and *fig.* 23, A, B, C, D, E, F, G, H, I, in the fame plate, reprefent a fucceffive feries of plates, or laminæ, placed on the cubic nucleus, each decreafing by one row on the angles. Thefe are defcribed under the article CRYSTAL, but referred to *Plate* I. *fig.* 23: by applying that defcription to the proper figures as here given, the reader will be able to comprehend this cafe of decrement, where a regular octahedron is formed on a cubic nucleus. The arrangement of the integrant molecules on one of the triangular faces of the octahedron is reprefented *Plate* IV. *fig.* 37. *Cryftallography.*

If the decrements on the angles of a cube were to ftop before they terminated in a point, there would remain faces parallel with that of the cube, which will be evident from infpecting *Plate* III. *fig.* 36. The cryftal would then have fourteen faces, eight thofe of the octahedron, and fix thofe of the cube. Nothing is more common than to find fuch cryftals both in iron pyrites and in galena.

As another example of decrements on the angles, let us take the rhomboid (*Plate* IV. *fig.* 38.), which differs fomewhat from the cube. If the plates applied fucceffively upon all the faces of this rhomboid fuffer decrements only at the angles contiguous to the fummits A and O', and that thefe these decrements take place by two ranges, then instead of twenty-four faces, only six would be formed; and if we conceive these prolonged till they meet each other, they would conjointly form a very obtuse rhomboid (*fig.* 39.) encircling the nucleus. The summits A, O′, coincide with the summits of the nucleus, from which the decrements commenced, and each of the faces A *e i o* corresponds with one of the faces of the nucleus; so that the diagonal which passes through the points *e i* is parallel with the diagonal E I of the nucleus, but somewhat more elevated. This kind of crystal is found among the secondary crystals of oligiste iron-ore.

As a further illustration of the different variations of which the decrements, whether of the superior or inferior angle, are susceptible, let G *g* be any rhomboid whatever (*Plate* IV. *fig.* 45.), the summits of which are S *s*. Let S *g″*, *s* G″, *fig.* 46, be a quadrilateral figure formed by cutting through the rhomboid G *g* in the direction of a plane, formed by the two oblique diagonals S *g″*, *s* G″, *fig.* 45, and the edges S G, S *g″*. This quadrilateral figure, termed by Haüy the principal section of the rhomboid, is divided in the figure into a number of small quadrilaterals representing the principal section of as many molecules. Let S G, *g″* G′, *fig.* 47, be the face of the rhomboid, *fig.* 45, marked with the same letters, and subdivided into the bases of the molecules of which it is composed. If we suppose that the angle *g″* undergoes a decrement by a single row of molecules, the small rhomboid represented by *o n z g″* will be wanting; hence it is obvious, that the edges of that plate will have the direction *o z*, and that the distance between the angle *g″*, from which the decrement sets out, and the edge *o z*, will be measured by the semidiagonal of a molecule, or *r g*. If the decrement took place by two ranges, the edge *q*, the first plate of superposition, will correspond with *c d*, and the distance between it and the angle *g″* will be measured by the diagonal molecule *g n*. Hence we may conclude, that in the decrements on the angles, the distance between one plate and the succeeding one, which is the same as between the point of departure and the edge of the first lamina, is equivalent to as many semidiagonals of a molecule as there are ranges taken away, as will be further evident by inspecting *fig.* 37. But in decrements on the edges, the distance between two successive plates is equal to the breadth of as many molecules as are taken away.

This being understood, let us suppose a decrement of two rows upon the angle *g″*. In that case, the quadrilateral *n e a p*, *fig.* 46, being a section made in the first plate of superposition, the decreasing edge of this plate will coincide with the little edge *e n*, since *g n* is the same diagonal as in *fig.* 47; therefore if we draw the straight line *g″ e h*, it will coincide with the face produced by the decrement. But *g″ h* being, in this case, parallel to the axis S *s*, as may be demonstrated geometrically, hence it follows that the secondary faces constitute the faces of a prism. If the decrements went on more rapidly, the faces of the secondary crystal would have different angles of inclination to the axis, as will be evident from inspecting *Plate* IV. *fig.* 46. If the decrement were by four ranges, for instance, the edge of the first plate of superposition would coincide with the line *y g*; then the line *g q* S′ indicates the position of the face produced by the decrement. What has been stated, where the plane is parallel to the axis, holds true with respect to all possible varieties of the primitive rhomboid.

Mixed Decrements are those in which the number of ranges taken away in breadth and height give ratios, the two terms of which surpass unity. As, for example, decrements by two ranges of molecules in breadth, and three in height, or by three ranges in breadth and two in height, &c. It is easy to see, that the theory may with facility be reduced to that of decrements, in which there is only one row of molecules taken away in one of the two directions.

Intermediate Decrements.—These will be best explained by references to the figures.

Let A A′, *Plate* IV. *fig.* 48. be a parallelopiped of any kind, which undergoes a decrement by two ranges on the angle E O I of its base A E, O I. It is obvious, that the edges of the plates of superposition will have the directions *b c*, *r s*, parallel to the diagonal E I, and so situated that these will be upon the sides O E, O I, two rows of molecules comprehended between the angle O and the line *b c*, and likewise between *b c* and *r s*. But, as has been already said, the plates applied upon the adjacent faces I O, A′ K, E O, A′ H, undergo likewise auxiliary decrements, which continue the effect of the decrement upon the angle E O I. But such, in this case, are the effects of these decrements, that the edges of the plates applied upon I O, A′ K have the directions *c g*, *s t*, and those of the plates applied upon E O, A′ H, the directions *b g*, *n t*; for since the lower edge of the first plate applied upon E O I coincides with *b c*, and the height of this plate corresponds to that of a single molecule, a little attention will satisfy us, that the plane *b c g*, which, on one part, coincides likewise with *b c*, and, on the other, separates from the base A E, O I by a quantity measured by O *g*, the height of a single molecule, is necessarily parallel to the face produced by the decrement. The same holds with the plane *r t s*. From this it follows, that if we suppress the part situated above *r t s*, we shall have a solid on which the face *r t s* will represent the effect of the decrement which we are considering.

Now the direction *c g*, *s t*, of the plates applied upon the face I O, A′ K, (and the same may be said of the face E O, A′ H,) in consequence of the auxiliary decrements, are neither parallel to the edge, nor to the diagonal of the face, but intermediate between the one and the other. This want of parallelism will become still greater, if we suppose the decrements upon the angle of the base E O I to take place by three or four ranges. This is the kind of decrement to which the name of intermediate has been given. It is obvious, that it may take place in an infinite number of different directions, according as it deviates more or less from its two limits, the parallelism with the edge and the diagonal of the face.

In cases similar to those of *Plate* IV. *fig.* 48. we avoid the complication introduced by these intermediate decrements, by supposing them comprehended under the principal decrement. But certain crystals exist in which all the three decrements round the same solid angle are intermediate. In such a case, the simplest of the three is chosen as the principal decrement, and the other two considered as auxiliary. *Fig.* 49. represents a case of this kind: *c n*, which is the edge of the first of the plates applied upon A E, O I, is so situated, that on the side of O I there are three molecules subtracted, while on the side O E there is only one: *n p*, which is the edge of the first plate applied upon I O, A′ K, indicates three molecules subtracted from O I, and two from O A′: *c p*, which is the edge of the first plate applied upon E O, A H, shews the subtraction of two molecules on O A′, and only one on O E.

It is easy to see, that the decrements take place relatively to the different faces situated round the angle O, as if the molecules that compose the different plates of superposition being united invariably several together, compose other molecules of a higher order, and as if the subtraction took place by single ranges of these compound molecules. Thus there will

will be on the base A E, O I, a decrement of triple molecules by two ranges in height, since on one part, the quadrilateral figure *c* O *n z*, which represents the base of a compound molecule, is equivalent to the bases of three simple molecules; and on the other, the line O *p*, which corresponds to the height of a plate of superposition, is equivalent to the height of two simple molecules. It is easy to conceive likewise, that the decrement relative to the face E O, A′ K, takes place by two ranges in height of double molecules; because *c* O *p x* contains the bases of two simple molecules, and O *n* is equal to the length of three simple molecules. In the decrement which takes place upon I O, A′ K, there is a subtraction of one row of molecules, triple in one direction, and double in the other.

Among these three decrements, the one which it appears natural to adopt as the principal, is the second which takes place upon the face E O, A′ H; because it is the one whose direction deviates the least from that of the diagonal E A′, or because it takes place by double molecules, which is a more simple decrement than the other two.

To give some further examples of intermediate decrements, let us suppose O I, I′ O′, one of the faces of cubic nucleus (see *Plate* IV. *fig.* 50. *Crystallography*); and that the decrement took place on the angles by the subtraction of double molecules: in this case, the edges of the laminæ of superposition will be in the direction of the lines *d n*, *k m*, *a b*, *c b*, &c.

Let E I′, *fig.* 51. be a cubic nucleus, and suppose the decrements are made parallel to the lines *k m*, *l m*, *k r*, *l r*, always by subtraction of double molecules, but in such a manner, that there shall be three ranges taken away in the direction of the breadth, and one in that of the height: in this case, the decrements will be both intermediate and mixed. Suppose also that the edges of the laminæ of superposition, situated around one solid angle O, had directions which crossed, so that with respect to the face O I, I′ O′, the greatest number of the faces of the molecules should be taken away on the side O I′; but on the face E O, O E, it should be on the side O O′, and with respect to face E A, I O, it should be on the side E O; the effect of these different decrements would produce three faces round each solid angle, which would be situated in an inclined manner with respect to the faces of the nucleus; and because the cube has eight solid angles, the secondary crystal would have twenty-four faces, which would tend to unite four and four, and form the summit of a pyramid round each face of the nucleus. But if we suppose the decrement to cease before these are completed, there will remain six faces parallel to those of the nucleus, and we shall have a polyhedral crystal of thirty faces, as represented *fig.* 52. The angles *k m*, *l r*, corresponding with those of the nucleus, are rhombs; and the faces *m l′*, *r o*, are equal and similar trapeziums. This form is that of one of the varieties of iron pyrites.

Suppose intermediate decrements on the two lateral angles of a rhomboid G G′, *Plate* IV. *fig.* 47, and that these decrements take place by ranges of double molecules, parallel to the faces *u m*, *x y*, *u′ m′*, *x′ y′*. It is evident, that these decrements will produce above each rhomb of the primitive nucleus S G, *g″* G′, two faces, which, commencing at the angles G G′, will converge towards each other, and come in contact in a line situated above the diagonal S *g″*, but inclined to that diagonal; so that the complete result of the decrement will be the formation of twelve faces, disposed six and six towards each summit. *Plate* IV. *fig.* 53. represents one of these solids, with its nucleus inscribed. It is a variety of calcareous spar which sometimes occurs. The lines *a b a′* shew the direction of a fracture parallel to the face G *g″*, G′ S, of the primitive nucleus. It appears from this figure, that the nucleus does not touch the secondary crystal, except by its lateral angles, which are situated in the edges B S′, D *s′*, C *s′*, &c. while in the dodecahedron of Bergmann, represented in *Plate* II. *fig.* 22, and called by Haüy *metastatic calcareous spar*, the lateral edges of the nucleus coincide with those edges of the secondary crystal that constitute the common basis of the two pyramids, as is evident from inspecting *Plate* II. *fig.* 23.

Hitherto immediate decrements have been observed only in a small number of instances, but they lead to forms as simple as the other, and give some curious results, which deserve to be studied in a mathematical point of view, without any reference to crystallography.

Compound secondary Forms.—Simple secondary forms are those which proceed from a single law of decrement, the effect of which covers and conceals the nucleus, which only touches the secondary crystal by certain angles or edges. Compound secondary forms are those which are produced by several simultaneous laws of decrement, or by one law which has not reached its limit; so that faces remain parallel to the original faces of the nucleus, which further modify the faces of the crystal.

Suppose, for instance, the law which produces the octahedron from the cube (*Plate* III. *fig.* 36.) should concur with that from which results the dodecahedron with pentagonal faces. (*Plate* III. *fig.* 31.) The first of these laws would produce eight faces, which would have for centres the eight angles of the cubic nucleus. Each of these faces, as, for instance, that whose centre coincides with the solid angle O, *fig.* 31, will be parallel to the equilateral triangle, whose sides pass through the points *p s t*, *fig.* 34; in like manner, the centre that coincides with the front O′ will be parallel to the equilateral triangle, whose sides pass through the points *s n p*, *Plate* IV. *fig.* 54. But the second law produces faces situated as the pentagon, cut by the sides of the triangles *p s t*, *s n p′*. Now the section of these triangles upon the pentagon *t* O *s*, O′ *n*, *fig.* 31, reduces the pentagon to an isosceles triangle, which has the line *t n* for the base: the two other sides are those which pass through the points *t s*, *n s*. The same takes place with the other pentagons. Hence it follows, that the secondary crystal produced will be an icosahedron, bounded by eight equilateral triangles, and twelve isosceles triangles. (See *Plate* IV. *fig.* 54.) This icosahedron occurs in iron pyrites; it is different in its form from the regular icosahedron of geometers: the latter form does not exist among crystals, and cannot be produced by any law of decrement. The same remark applies to the dodecahedron, bounded by twelve regular and equal pentagons.

Another illustration of a compound secondary form is offered in the regular six-sided prism of calcareous spar. (*Plate* II. *fig.* 17.) From the manner of dissecting this prism, (see CRYSTAL,) it is easy to conceive that the rhomboidal nucleus, *fig.* 21, has six of its solid angles E, O, I, K, G, H, situated in the middle of the lateral faces of the prism: hence it follows, that these angles are the points from whence the decrements set out from the three plane angles of the rhomb E O I, E O A′, I O A′, which form the solid angle O; but it is only necessary to consider the decrements on one of them, supposing the same decrement extends on the two adjacent planes that form the solid angle. Let us then refer all the decrements to the six angles E O I, E H G, I K G, H G K, O I K, H G O, the first of which are turned towards the summit A, and

and the three laſt to the ſummit A'. If we ſuppoſe a decrement by two ranges of rhomboidal molecules on theſe different angles, ſix faces will be produced parallel to the axis, as has been already obſerved.

The plates of ſuperpoſition, at the ſame time that they undergo a decrement towards the inferior angles, will extend by their ſuperior parts, ſo as to remain always contiguous to the axis, the length of which will progreſſively be augmented. The ſmall faces produced by the decrements on the angles will gradually increaſe till they touch each other; we ſhall then have the ſolid repreſented A A, *fig.* 20, where each of theſe ſmall faces, as *o* O *o*, is marked with the ſame letters as the angle to which it belongs, and which is now ſituated in the middle of the triangle, becauſe it conſtitutes the point from which the decrements ſet out. As new plates are applied, the points or line *o o* riſe up, and the point O ſinks down; ſo that at a certain period we ſhall have the ſolid repreſented *fig.* 19, where the faces produced by the decrements become pentagons *o o i*, O *e*.

Let us now ſuppoſe a ſecond decrement to concur with the firſt, and to take place by a ſingle range upon the ſuperior angle E A I and the inferior angle H 'A K, and alſo on the other faces of the rhomb which form the ſolid angles A and A'; the effect of this will be to produce two faces perpendicular to the axis; and when it has reached the point at which theſe faces cut the ſix faces parallel to the axis which are produced by the firſt decrement, the ſecondary ſolid will be completed, and will be a regular ſix-ſided priſm. (*Plate* II. *fig.* 17.) It has been already ſaid, that the reſult is general, whatever be the form of the primitive rhomboid. It may now be ſeen why, in the mechanical diviſion of the priſm, the ſection *pp*, *oo*, has the ſides *pp*, *oo*, parallel to each other, and to the diagonal of the nucleus E F, *fig.* 21. Since the two decrements taking place, one upon the angle E O I, the other upon the angle E A I, the plates of ſuperpoſition ought to have the edges formed by the decrements parallel to the ſame diagonal, or to E I.

In the caſe we have been conſidering, and which is the moſt common, the axis of the ſecondary cryſtal is longer than that of the nucleus; but if we ſuppoſe the two decrements to commence at the ſame time, then the axis of the priſm being equal to that of the nucleus, both the lateral angles and the ſummits of the nucleus would touch the priſm, the one on the ſides, and the other the baſes. If the decrement were to commence on the ſuperior angles prior to the lateral decrements, the ſummits of the nucleus would then be contiguous to the baſes of the priſm, whilſt its lateral angles would be wholly within the priſm, between its planes and axis. This is the caſe with certain cryſtals, in which the priſm is very ſhort, and reſembles an hexagonal plate.

Another remarkable example is offered in that variety of calcareous ſpar, called by Haüy *analogique*. (See *Plate* IV. *fig.* 55.) It is compoſed of twenty-four trapezoidal faces, of which ſix are vertical faces, as *d a b c*, *d a' b c'*, and twelve others, diſpoſed ſix and ſix, as *c' p a*, and *c' p a'' b*, &c. and ſix terminal faces, as *p a p' s*. The vertical trapezoids reſult from the ſame law that produces the hexahedral priſm (*Plate* II. *fig.* 17.); the ſecond reſult from the law which produces the metaſtatic cryſtal, *fig.* 22. In comparing *fig.* 55 with *fig.* 21, we may ſee that the vertical faces cut thoſe of the metaſtatic cryſtal, ſo as to intereſt the lateral ſolid angles E O, I K, &c. *figs.* 22 and 23; and, laſtly, the terminal faces reſult from a decrement ſimilar to what produced the equiaxe cryſtal. (*Plate* III. *fig.* 34.) *Fig.* 55. A, B, C, D, repreſents the different trapezoidal faces of this cryſtal. Various relations of proportion between their ſides and angles are given by Haüy, Minéralogie, tom. i. p. 85, 86.

It is a character common to all the primitive forms to be diviſible, parallel to their faces. In the parallelopiped, where this diviſion is not joined with ſome other in a different direction, it leads us obviouſly to the form of molecule ſimilar to that of the primitive cryſtal. In the regular ſix-ſided priſm, it gives us for a molecule the triangular priſm, as has been before obſerved. (See *Plate* V. *fig.* 56.) In the octahedrons, it appears to produce two kinds of molecules, tetrahedrons and octahedrons. Haüy, in this caſe, conceives that the tetrahedron is the integrant molecule, and that the octahedrons are empty ſpaces between them. The difficulty is removed, by conceiving the molecules to be an aſſemblage of ſpherical particles, as we have before obſerved. The dodecahedron, with iſoſceles triangular faces, cannot have molecules extracted, without dividing it in directions different from thoſe which are parallel to the face. The cutting-planes muſt paſs through the axis, and through the edges contiguous to the ſummits, from whence will reſult irregular tetrahedrons. Some other primitive forms divide alſo in directions which are not parallel to the faces, as we have ſeen in the caſe of the tourmaline. See *Plate* III. *fig.* 26.

Thus, beſides parallelopipeds, there are two other forms which integrant molecules aſſume, namely, the tetrahedron and the triangular priſm; but it deſerves particular attention, that the tetrahedral and priſmatic molecules are always arranged in ſuch a manner in the interior of cryſtals, that, taking them in groups of two, four, ſix, or eight, they compoſe parallelopipeds, ſo that the ranges ſubtracted by decrements are no other than theſe parallelopipeds; and we may conſider ſuch decrements as taking place by one or more ranges of rhomboidal molecules. If, for example, we take the regular ſix-ſided priſm (*Plate* V. *fig.* 56.), ſuppoſe one baſe of this priſm divided by ſections parallel to its ſides into ſmall triangles, which form the baſes of the integrant molecule; it is evident that any two adjoining triangles, A *p i*, A O *i*, compoſe a rhomb, and by their union the two little triangular priſms to which theſe baſes belong would form by their union a rhomboidal priſm or parallelopiped. It is obvious, therefore, that we may conceive the larger priſm to be compoſed of ſimilar rhombs. Now, if we conceive a ſeries of plates piled upon the hexagon A, B, C, D, F, G, and which undergo, for example, on their different edges, a ſubtraction of one range of theſe parallelopipeds, theſe edges will ſucceſſively correſpond with the lines of the hexagon *i l m n r b i*, *k u x y g e*, &c. from which we ſee that the quantity by which each plate decreaſes is a ſum of parallelopipeds, or priſms with rhomboidal baſes; and if the decrement attains its limit, we ſhall have a right ſix-ſided pyramid, which will have for its baſe the hexagon A, B, C, D, F, G. Theſe parallelopipeds, compoſed of tetrahedrons or triangular priſms, are called by Haüy *ſubtractive molecules*; and as far as the theory of cryſtals is concerned, we may conceive all cryſtals to be compoſed of parallelopipeds.

Plate V. *fig.* 58. refers to a particular caſe deſcribed in a note by Haüy (tom. i. p. 96.), to explain the vacuities on the edges *h*, *c*, *l*, *m*; but being of leſs importance, we proceed to ſtate the obſervations of M. Haüy on ſome apparent anomalies in cryſtallization.

In common cryſtals, the faces adjacent to each other always form ſalient and never re-entering angles; but certain cryſtalline forms exiſt, which preſent the latter angles. Let B *d*, *Plate* V. *fig.* 60. repreſent an oblique priſm with rhomboidal

rhomboidal bafes, fituated in fuch a manner, that the faces A D, *a d*, and C D, *c d*, are vertical, and B, D, are the acute angles of the bafe, and that thefe proceed in an afcending direction from A to C. Let us fuppofe alfo, that the prifm is cut into two equal parts by a plane which paffes through the diagonals drawn from B to D, and from *b* to *d*, and that the one half remained fixed, whilft the other is reverfed without being feparated from the former. The cryftal will then be prefented under the afpect feen in *fig.* 61, where the triangle *b'*, *d'*, *c*, which was one of the halves of the inferior bafe, *fig.* 60, is now fituated in the upper part, *fig.* 61, and forms a falient angle or projecting edge with the triangle A B D. Whilft the triangle B D C, *fig.* 61, which was one of the halves of the fuperior bafe, *fig.* 60, is tranfported into the lower part, *fig.* 61, and forms a re-entering angle with the triangle *a b d*, we may eafily conceive that the plane of junction D B, *b d*, of the two halves of a rhomboid is fituated like a plane drawn, formed by a decrement on one range or other of the edges A *a*, C *c*, *fig.* 60, and thus the manner in which thefe halves join is in ftrict relation with the ftructure.

Now if we imagine a fecondary form, which has for its nucleus a fimilar prifm to the above, and if we fuppofe that it has been cut in the direction of the plane D B, *b d*, and that one of the halves has been reverfed as in *fig.* 61, the arrangement may be fuch, that there will ftill be a re-entering angle at one termination, and a falient angle at the other, refulting from the mutual incidences of the faces produced by the decrements.

In certain cafes, the plane of junction on which the two halves of the cryftals are joined is fituated parallel to one of the faces of the nucleus, and the arrangement does not admit of prefenting a re-entering angle oppofite to a falient one.

Thefe cryftals which are here defcribed are called by Haüy *hemiftropes*, or half reverfed. Romé de Lifle has called fuch cryftals marles.

Another accident extremely common is the manner in which cryftals in groups are inferted into each other. This kind of penetration is fubject to many diverfities; but on accurate examination, we fhall find that they are fubject to certain laws always analogous to thofe of ftructure, and that thefe cryftals, inftead of being precipitated confufedly on each other, have a certain kind of arrangement. In illuftration of this, let *Plate* V. *fig.* 62. be a cube, and M N *r* an equilateral triangular facet, produced by a decrement of one range round the angle A: let us fuppofe a fecond cube modified in the fame manner, and attached to the former by a facet refulting from a fimilar decrement; we fhall have the combination reprefented *fig.* 63.

We may alfo conceive that one of thefe cubes, for inftance the lower one, is increafed in all its dimenfions, except in thofe places where the other forms an obftacle to its progrefs. As the increment continues increafing, it will more and more envelope the upper cryftal, and may finifh by covering it entirely. We obferve cryftals funk into each other at different degrees of depth, but always in fuch a manner, that their plane of junction has a pofition analogous to planes refulting from decrement; fo that both follow their common progrefs to this plane, which ferves as their refpective limit. Cubes of fluor fpar inferted into each other have the laminæ of each extended without interruption, until they are ftopped by the common plane of junction.

The example here ftated relates to a very fimple and regular law of decrement. But frequently the laws which determine the plane of junction are more or lefs complicated, and there are a few which are rather extraordinary. When two prifms crofs towards the middle of their axis, there are two planes of junction which unite croffing each other, as in the mineral called ftaurotide, and thefe planes have pofitions analogous to thofe which would be determined by the known laws of decrement.

In the preceding theory of cryftallography it has been conftantly fuppofed, that the laminæ compofing cryftals of the fame fpecies proceed from a common nucleus, undergoing decrements fubject to certain laws, on which the forms of thefe fecondary cryftals depend. But this, fays Haüy, is only a conception adopted to make us more eafily perceive the mutual relations of the forms we are treating of. Properly fpeaking, a cryftal taken as a whole is only a regular group of fimilar molecules. It does not commence by a nucleus of a fize proportioned to what it afterwards acquires, or that which we can extract from it by mechanical divifion; and the laminæ which cover this nucleus are not applied fucceffively over each other in which the theory confiders them. The proof of this is, that among cryftals of different fizes that are often attached to the fame fupport, thofe which can only be diftinguifhed with the microfcope are as complete as the largeft; from whence it follows that they have the fame ftructure, that is to fay, they have already within them a fmall nucleus proportioned to their diameter, and enveloped by the requifite number of decreafing laminæ to form the faces of the fecondary cryftal. We muft therefore conceive, that from the firft commencement a cryftal fimilar to the rhomboidal dodecahedron is already a fmall dodecahedron, and contains a cubical nucleus proportionally fmall, and that this kind of embryo continues to increafe without changing its form by the addition of new laminæ on all the fides, fo that the nucleus increafes on its part, always preferving the fame relation with the entire cryftal.

We fhall render this idea diftinct by a conftruction which refers to the dodecahedron, and reprefented by a plane figure. What is faid of this figure may eafily be applied to a folid, fince we can always conceive a plane figure to be a fection made in a folid: let *t s*, *z s''*, *Plate* V. *fig.* 59. A, be an affemblage of fmall fquares, in which the fquare B N, D G, compofed of forty-nine fquares, reprefents a fection of the nucleus, and the extreme fquare *l p i b f c s*, &c. the fteps formed by the laminæ of fuperpofition. We may conceive that the affemblage commenced by the fquare B N, D G, and that different piles of fmall fquares are afterwards applied on each of the fides of the central fquare; for inftance, on the fide B N, the five fquares comprehended between *f* and *b*, afterwards the three fquares contained between *c* and *c*, and then the fquare *s*. This progrefs correfponds with what would take place if the dodecahedron commenced with a cube proportioned to its volume, and which afterwards increafed by an addition of laminæ conftantly decreafing.

But we may alfo fuppofe, that the affemblage of molecules commenced as reprefented *Plate* V. *fig.* 59. C, in which the fquare B N, D G, is only compofed of nine molecules, and had on each fide of it only a fingle fquare, *s t*, *s' z*. If we refer this affemblage in imagination to the folid, of which it is a fection, we fhall eafily perceive that this folid had for its nucleus a cube compofed of twenty-feven molecules, and that each face compofed of nine fquares had placed on the middle one a little cube, fo that the decrement of one range is already feen in the initial dodecahedron.

By the addition of new fquares, this affemblage will become that of B, *fig.* 59, in which the central fquare B N, D G, is formed of twenty-five fmall fquares, and fupports on each of its fides a range of three fquares, befides the terminal fquares *s t*, *s' z*. Here we have already two laminæ of fuperpofition inftead of one only. Laftly, by a further

further application, the aſſemblage B, *fig.* 59, will be changed into that of A, *fig.* 59, where we have on each ſide three laminæ of ſuperpoſition. Theſe different tranſitions, of which we may continue the ſeries as far as we pleaſe, will convey an idea of the manner in which ſecondary cryſtals may increaſe in magnitude and ſtill preſerve their form, from which we may judge that the ſtructure combines with this augmentation of volume in ſuch a manner, that the law was already ſketched in the naſcent cryſtal, according to which the laminæ of ſuperpoſition ſucceſſively decreaſe when the nucleus has attained its greateſt dimenſions.

The inſtrument by which the angles of cryſtals are meaſured is called a goniometer. For a deſcription of Dr. Wollaſton's reflecting goniometer, ſee GONIOMETER. A more ſimple inſtrument was employed by Haüy. (See *Plate* VI. *fig.* 93. *Cryſtallography.*) It conſiſts of a ſemicircle of braſs divided into degrees. At the centre is fixed a pin, upon which ſlide the two arms A B, G F. The laſt of theſe, by means of a ſcrew, may be fixed in any poſition, ſo that the diſtance between the end G and the centre may correſpond with the face of the cryſtal to be meaſured. The other arm A B is drawn up till the diſtance between B and the centre correſponds as nearly as poſſible with the ſize of the other face of the cryſtal. It is then turned round till the angle of the cryſtal to be meaſured correſponds exactly with the angle B *c* G; the arm A B then cuts the ſemicircle in the angle, which correſponds with that of the cryſtal. This inſtrument is found to be not ſufficiently accurate for delicate obſervations, but it is truly ſurpriſing that Haüy was enabled by it to approximate ſo nearly to the correct admeaſurement of the various cryſtals which he has deſcribed. The inſtrument for determining the electricity of cryſtals (*Plate* VI. *fig.* 92.) is deſcribed in the article MINERALOGY, *Addenda.*

On the Notation of Cryſtals.—To facilitate and abridge the deſcription of the ſtructure of ſecondary cryſtals, Haüy has invented ſymbols which denote the particular laws of decrement, that produce the various forms that may occur. This mode of notation will be eaſily underſtood by a reference to the figures in *Plates* V. and VI. *Cryſtallography.* Let *Plate* V. *fig.* 64. repreſent any oblique parallelopiped, the faces of which have angles of different meaſures; let it be the primitive form of ſome mineral, as felſpar. The vowels are to repreſent the ſolid angles. The four firſt, A, E, I, O, are placed at the four angles of the upper baſe, following the order of the alphabet. The conſonants are choſen to deſignate the edges. The ſix firſt are placed on the middle of the edges of the upper baſe, and upon the two longitudinal edges of the lateral faces, B C, D F, G H. The letters P, M, T, which are the initials of the ſyllables of the word *Primitive,* are placed in the middle of the upper baſe, and of the two lateral planes or faces exhibited to view.

Each of the ſolid angles, or of the ſix edges marked by letters, is ſuſceptible of undergoing particular laws of decrement, on account of the irregular form of the parallelopiped. For this reaſon, they are marked each with a different letter. But as the laws of decrement act with the greateſt poſſible ſymmetry, every thing which takes place with reſpect to the angles and edges that undergo diſtinct decrements, takes place alſo on the angles and edges that are diametrically oppoſite, and are perfectly equal, but which are not viſible, or are not marked. Thus in *fig.* 66. the edges A I, *p s*, A E, and *p u*, and the ſolid angles I and *s*, O and *r*, are equal. It is, therefore, only neceſſary to mark the number of ſolid angles or edges that have diſtinct decrements, becauſe theſe are underſtood to include all thoſe which take place on analogous edges or angles.

In ſome caſes, it is neceſſary to indicate the analogous edges and angles; this is done by ſimilar ſmall letters: the angles analogous by A E, I O, are repreſented by *a e*, *i o*, and the ſame with the edges. But it is ſeldom neceſſary to mark theſe ſmall letters in the figure; it is ſufficient to introduce them into the ſymbol of the cryſtal, becauſe the place which every one ſhould occupy in the figure may eaſily be conceived.

To indicate the effects of decrements by one, two, three, or more ranges in breadth, the figures 1, 2, 3, 4, &c. are employed in a manner to be immediately explained; and to indicate the effects of decrements by two, three, &c. ranges in height, the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c. are employed.

The three letters P, M, T, ſerve to diſtinguiſh either the form of the nucleus without any modification when they alone conſtitute the ſymbol of the cryſtal, or the faces parallel to thoſe of the nucleus in the caſe where the decrements do not reach their limit; and then theſe letters are combined in the ſymbol of the cryſtal with thoſe which relate to the angles or edges that have undergone decrements.

Let us ſuppoſe that one of the ſolid angles O, *fig.* 64. is intercepted by a ſingle additional face. The decrement which produces this face may take place either on the upper baſe P, or on the plane T, which is on the left of the obſerver, or on the face M, which is on the right. In the firſt place, the figure marking the decrement is placed above the letter O; in the ſecond caſe, the figure is placed on the left-hand, a little above the letter; and in the third caſe, it is placed on the right-hand. Thus $\overset{2}{O}$ denotes the effect of a decrement by two ranges in breadth, parallel to the diagonal of the baſe P, that paſſes through I, E; O^3 indicates the effect of a decrement by three ranges in breadth, parallel to the diagonal of the face M, which paſſes through the angle E; and ${}^4O$ indicates the effect of a decrement by four ranges in breadth, parallel to the diagonal of the face T, that paſſes through the angle O.

When the decrement takes place on one of the three other ſolid angles I, A, E, the obſerver is ſuppoſed to move round the cryſtal till he is oppoſite to that angle, or to turn round the cryſtal till the ſolid angles E, A, I, are exactly oppoſite to him; and it is relative to that poſition that the decrement is ſaid to take place to the right or the left.

For example, if we are ſpeaking of the ſolid angle A, the ſign ${}^2A$ will repreſent a decrement by two ranges on the ſurface A E, *s r*, *fig.* 66. or oppoſite to T; and A^3 will repreſent the effect of a decrement by three ranges upon the face A I *n r*, oppoſite to M.

As to the decrements on the edges, thoſe which take place towards the boundary of the upper baſe B, C, F, D, are expreſſed by a letter placed above or below the letter as the effects occur above or below the terminal edge, ſuppoſing them to ſet off from the edge to which they are referred, whilſt thoſe which take place on the lateral edges are conducted by an exponent placed on the right or the left of the letter, according as they occur in one direction or the other. Thus $\overset{2}{D}$ expreſſes a decrement by two ranges proceeding from D towards C: $\overset{2}{C}$, a decrement by two ranges proceeding from C towards D: $\underset{2}{D}$, a decrement by two ranges deſcending upon the face M: H^3, a decrement by three ranges, proceeding from H towards G: and G^4, a decrement of four ranges proceeding from G towards the edge oppoſite to H, or A *r*, *fig.* 66. When it is neceſſary to denote by a ſmall letter, ſuch as *d*, a decrement upon the edge *u r*, *fig.* 66. oppoſite to the edge denoted by the capital letter D, *fig.* 64, D, *fig.* 64, we muſt ſuppoſe the faces of the cryſtals reverſed. Hence, $\overset{2}{d}$ will expreſs a decrement by two ranges upon the other baſe *p*, juſt as $\overset{2}{D}$ expreſſes a ſimilar decrement on the baſe P. For the ſame reaſon, $\underset{3}{c}$ will expreſs a decrement by three ranges proceeding from *r u*, to E O.

If the ſame ſolid angle, or the ſame edge, undergo ſeveral ſucceſſive decrements on the ſame ſide, or different decrements which take place on different ſides, the letter pointing out the angle or edge is repeated as often as the decrements, varying the figure each time, to make it correſpond with the particular decrements denoted. Thus, $\overset{2}{D}$, $\underset{3}{D}$, will denote two decrements upon the edge D, one of two ranges on the baſe P, and another of three ranges upon the face M; and ${}^{2}H$, H^{4}, will denominate two decrements, one by two ranges on the left, the other by four on the right of the edge H.

Mixed decrements are marked according to the ſame principles, employing the fractions $\frac{2}{3}$, $\frac{3}{4}$, which repreſent them; the numerator referring to decrements in breadth, and the denominator to decrements in height.

The intermediate decrements are thus deſcribed. Let A E, I O, (*Plate* V. *fig.* 67.) be the ſame face as in *fig.* 66, but divided into rows or ranges; let us ſuppoſe a decrement by one range of double molecules, according to the lines parallel to *x y*; ſo that O *y* meaſures the double length of a molecule, and O *x* that of a ſingle molecule.

This kind of decrement is thus expreſſed, ($\overset{1}{O}$, D^{1}, F^{2},) the parentheſis indicates that the decrement is intermediate; $\overset{1}{O}$, that it takes place by one range on the ſolid angle marked by that letter in *fig.* 64; D^{1}, that there is one length of a molecule taken away along the edge D; and F^{2}, that two lengths are taken away along the edge F.

The written language to denote the ſymbols, that they may be eaſily expreſſed when dictated, would be thus: for O^{2}, ${}^{3}O$, read, O *two on the right*, O *three on the left*; $\overset{2}{O}$, $\underset{4}{O}$, read, O *under two*, O *above four*. And the ſymbol ($\overset{1}{O}$, D^{1}, F^{2},) read, *in a parentheſis*, O *under one*, D *one*, F *two*.

The order in which theſe letters muſt be placed to denote a ſecondary cryſtal remains to be explained. If the alphabetical order were adopted, there would reſult a degree of confuſion in the picture which the formula preſents. It is more natural to conform to the order that would direct an obſerver in the deſcription of the cryſtal; that is, to begin with the priſm or middle part, and to indicate its different faces as they preſent themſelves ſucceſſively to the eye; then to paſs to the faces of the ſummit or the pyramid.

Suppoſe (*Plate* VI. *fig.* 68.) that variety of felſpar which Haüy calls bibinary, *viz.* where there are two decrements by two rows each. The primitive form is repreſented *figs.* 64 and 66. In this form of the cryſtal, the face *l* reſults from a decrement by two ranges on the edge G, *fig.* 64, going towards H; the face M, *fig.* 68. correſponds with M, *fig.* 64; the face T, *fig.* 68, is parallel to T, *fig.* 64; the pentagon *x* comes by a decrement of two ranges on the angle, correſponding with the angle I, *fig.* 64. and parallel to the diagonal A O. As this decrement does not reach its limit, the ſummit exhibits a ſecond pentagon P, parallel to the baſe P, *fig.* 64. All this deſcription may be exhibited by five letters in ſymbolic language: thus ${}^{2}G$ M T $\overset{2}{I}$ P denoting a decrement by two ranges on the edge G, and a decrement by two ranges on the angle I, *fig.* 64.

It is cuſtomary, in order to prevent any ambiguity, to place under the different letters that compoſe the ſymbol thoſe that correſpond to them in the figure. Thus in the bibinary felſpar, *fig.* 68. $\begin{matrix} {}^{2}G & M & T & \overset{2}{I} & P \\ l & M & T & x & P \end{matrix}$, the letters in the line below thoſe of the ſymbol enable us to compare the ſymbol with the figure, and thus to decypher the meaning with facility, however complicated it may be.

Where the primitive form has great ſimplicity, as in the cube and rectangular priſm, when the oppoſite angles are equal, one letter will denote them both, and when the oppoſite edges are equiangular, the ſame letter will denote either; for every thing that denotes one of them, takes place alſo in the other. If, for inſtance, we ſuppoſe *fig.* 64. to become more ſymmetrical, and that certain ſolid angles which were before unequal are become equal, they ſhould be marked with the ſame letter. If, for inſtance, the primitive form be a rectangular priſm, which has oblique-angled parallelograms for its baſes, one ſide of which is longer than the other, *fig.* 69; in this caſe, we have the angle O = A, I = E; we may ſubſtitute in each caſe the ſecond letter for the firſt, as is done *fig.* 69.

If we review the different kinds of parallelograms we ſhall find them acquire different degrees of ſimplicity, which occaſions new equalities in the angles and edges, and new ſubſtitutions of letters. The oblique priſm with rhomboidal baſes is repreſented *fig.* 70. The rectangular priſm with rectangular baſes *fig.* 71. The rectangular priſm with rhomboidal faces *fig.* 72. The rectangular priſm with ſquare baſes *fig.* 73.

The cube is repreſented *fig.* 74; here only the ſuperior baſe is marked, becauſe what takes place with reſpect to this may be applied indifferently to any of the other faces.

The ſame mode is employed in writing the ſymbols for theſe regular forms, only the letters that have the ſame name and the ſame figure are not repeated. An example will render this method evident. *Fig.* 75. repreſents the moſt common variety of the chryſoberyl, or cymophane, (ſee CHRYSOBERYL,) the nucleus of which is a rectangular parallelopiped, ſuch as repreſented *fig.* 71. The ſymbol of the ſecondary cryſtal, *fig.* 75, will be $\begin{matrix} M\,T & {}^{2}G & G^{2} & \overset{1}{B} & A^{\frac{3}{2}} & {}^{\frac{3}{2}}A \\ M\,T & s & & i & o & \end{matrix}$. This variety is called by Haüy annular cymophane.

To underſtand this expreſſion better, let us mark each angle and edge with a particular letter, as in *fig.* 76. In this caſe, the ſymbol would become M T ${}^{2}G$ H^{2}, $\overset{1}{B}$ $\overset{1}{F}$ $E^{\frac{3}{2}}$ ${}^{\frac{3}{2}}O$; but if we compare *fig.* 71. with 76, we ſhall ſee that H = G, F = B, O = A: hence if we ſubſtitute inſtead of their firſt letters their equal values, we get M T ${}^{2}G$ G^{2} $\overset{1}{B}$ $\overset{1}{B}$ $A^{\frac{2}{3}}$ ${}^{\frac{2}{3}}A$, which becomes the ſame as the one before given, when the uſeleſs repetition of $\overset{1}{B}$ is ſuppreſſed.

From the preceding ſtatement, it is evident that we muſt not confound ſuch ſymbols as ${}^{2}G$ G^{2} with G^{2} ${}^{2}G$; the firſt ſymbol indicates the decrements which take place on the face T, *fig.* 71. and on the edge oppoſite to it, going from the edges G towards thoſe that correſpond with them behind the parallelopiped. The ſecond ſymbol indicates the decrements which take place upon the face M, and which meet each other in the middle of that face. If theſe two decrements took place ſimultaneouſly, theſe ſymbols would be ${}^{2}G^{2}$.

In the preceding fymbols, each letter, fuch as on G^2 or ^2G, can only be applied to a fingle edge fituated to the right or left, as the letter is itfelf; but $^2G^2$ applies indifferently to the one edge or the other: hence it is needlefs to repeat the letter.

If we take *Plate* VI. *fig.* 77. as another example, and fuppofe *fig.* 70. to reprefent its primitive form, we fhall have for the fymbol of the variety of cryftal here reprefented,

$$\begin{array}{ccccccc} {}^3G^3 & M & \overset{2}{B} & \overset{3}{B} & \overset{1}{E} & \overset{8}{E} & P \\ o & M & r & s & z & u & P. \end{array}$$

In this fymbol, $^3G^3$ indicates two diftinct faces formed on each fide of each edge G, but it is not neceffary to place two letters under that fymbol, becaufe all the faces fituated in the fame manner being diftinguifhed by the fame letter in the figure; it is fufficient to point out that the fymbol $^3G^3$ applies to the faces marked with the letter *o*, and this requires only to write the letter *o* under the fymbol.

From the fame principles it follows, that the rhomboidal dodecahedron derived from the cube, *fig.* 74. is expreffed by the fymbol $\overset{1}{B}\ \underset{1}{B}$. The octahedron derived from the cube is thus expreffed $\overset{1}{A}\ {}^1A^1$.

The rhomboid, fuppofing it placed in the moft natural afpect, fo that the two folid angles, compofed of three fimilar plane angles, are in the fame vertical line, has, properly fpeaking, no bafe, but merely fummits, which are the extremities of its axis. Its angles and edges are marked as in *Plate* VI. *fig.* 78.

If all the lateral angles were indicated by letters, thofe that are neareft the fummit A would have the letter E, and thofe which are neareft the inferior fummit the letter *e*. As the rhomboid has fix faces equal and fimilar, it is only neceffary to confider the decrements relative to one of thefe faces; as, for example, that marked P, *fig.* 78, becaufe all the others are mere repetitions of this. The decrements which fet out from the fuperior angle A, or the fuperior edge B, will have the figure indicating the number of ranges placed below A and B. Thofe which fet out from the lateral angles E, will have their figures fituated at the fide and towards the top of the letter. Thofe decrements which fet out from the inferior angle *e*, or the inferior edge D, will have the figure placed above the letter *e* or D.

Suppofe, for example, that *fig.* 79. reprefents the variety of calcareous fpar, called analogie by Haüy, its fymbol would be $\begin{array}{ccc} \overset{2}{e} & \overset{2}{D} & \underset{1}{B} \\ c & r & g \end{array}$, the interpretation of which will be eafy. What has been faid of the rhomboid may be applied to the other primitive forms, of which we fhall give examples: *fig.* 80. reprefents the octahedron with fcalene triangles; *fig.* 82. the regular octahedron. In placing the figures that accompany the letters in the fymbols in *fig.* 80, the figure denoting the decrement is placed below the letter A or B, to reprefent decrements fetting out from the angle A, or the edge B. The figure is placed above for thofe which fet out from the edge D, and at the fide for thofe which fet out from the angle E.

If we want to denote a decrement by one range upon all the angles of the regular octahedron, *fig.* 82, we have only to write $\overset{1}{A}\ {}^1A^1$. To indicate a decrement by one range on all the edges we write $\underset{1}{B}\ \overset{1}{B}$. The firft of thefe decrements produces a cube, the fecond a rhomboidal dodecahedron. In fome mineral fpecies, as in the nitrate of potafh, the primitive octahedron, which is compofed of eight ifofceles triangles, fimilar four and four to each, ought to have the pofition reprefented as in *fig.* 83, that the fecondary cryftal may have the moft natural attitude. The edges which join the two pyramids ought to have two of them a vertical direction, as F, F; and two an horizontal direction, as B. By comparing *fig.* 83. with *fig.* 84, in which the letters are placed as if all the edges and angles had different functions, it will be eafy to conceive the arrangement of the letters adopted in *fig.* 83; for in the prefent cafe we have E=A, D=B, G=F.

The tetrahedron being always regular when it becomes a primitive form, it will be expreffed as in *fig.* 85, and the decrements marked as in the octahedron.

In the regular fix-fided prifm, *fig.* 86, the figures are written precifely in the manner already defcribed for the four-fided prifm. But it happens fometimes, that three of the folid angles taken alternately are replaced by faces, whilft the intermediate angles remain untouched. In that cafe, the prifm is diftinguifhed as in *fig.* 87. In the rhomboidal dodecahedron, *fig.* 88, each folid angle compofed of three planes may be affimilated to a fummit of the obtufe rhomboid: hence it is only neceffary to give letters to one face, as may be feen in the *fig.* A A, E E, B B, P. Where the parts of cryftals oppofite to thofe which undergo certain decrements remain untouched, it is eafy to mark this peculiarity by zeros. This cafe belongs chiefly to the tourmaline. One variety of the tourmaline is reprefented *fig.* 90, and the primitive form *fig.* 89. The prifm, which is ninefided, has fix of its faces, namely *s s*, produced by the fubtraction of one range upon the edges D D, *fig.* 89, and the three others, as *l*, by the fubtraction of two ranges only on three angles *e*. The inferior fummit has fimply three faces parallel to thofe of the nucleus; while on the fuperior fummit the three edges B, *fig.* 89, are replaced each by a facet *n n n*, *fig.* 90, in confequence of a decrement which has not reached its limit. This cryftal is reprefented by the following fymbol:

$$\begin{array}{cccccc} \overset{1}{D} & \overset{2}{e} & \overset{2\cdot0}{E} & P & \underset{1}{B} & \underset{1\cdot0}{b} \\ s & b & & P & n & \end{array}$$

$\overset{2\cdot0}{E}\ \underset{1\cdot0}{b}$ indicate, the one that the angles E, *fig.* 89, oppofite to *e*, undergo no decrement; the other, that the edges parallel to B remain alfo untouched. If thefe edges underwent a different law of decrement, for inftance, that which produced a fubtraction by two ranges, the fymbol would be, $\overset{1}{D}\ \overset{2}{e}\ \overset{2\cdot0}{E}\ P\ \underset{1}{B}\ \underset{2}{b}$: hence it may be underftood, that the decrements reprefented by a capital letter, accompanied with a figure, do not always include fimilar decrements reprefented by a fmall letter of the fame name. Thus $\underset{2}{B}$ does not implicitly imply $\underset{2}{b}$, or *vice verfâ*; it is only when the fecond letter is not introduced into the fymbol with a different figure, or a zero, that we imply that the fame decrements take place on the analogous fides or angles.

In the fymbol $\overset{1}{D}\ \overset{2}{e}\ \overset{2\cdot0}{E}\ P\ \underset{1}{B}\ \underset{2}{b}$, by $\underset{1}{B}$ is implied a decrement by one range, which takes place only on the edges contiguous to the fuperior fummit A, *fig.* 89: $\underset{2}{b}$ indicates a decrement by two ranges, which only takes place on the edges contiguous to the inferior fummit. The quantities $\overset{2}{e}$ and $\overset{2\cdot0}{E}$ indicate two ranges on the angles *e* only, and that no decrement whatever takes place upon the oppofite angles E.

2

The

The preceding illuſtrations of M. Haüy's mode of denoting the ſtructure of cryſtals by ſymbols, are given in detail to enable the ſtudent to make a figure of a cryſtal from the ſymbol repreſenting the laws of its formation. Shorter rules for enabling the ſtudent merely to read and underſtand this mode of notation will ſuffice.

1. The letters P, M, T, denote the faces of the nucleus or primitive cryſtal, or indicate that the faces are parallel to the faces of the primitive cryſtal marked with the ſame letters.

2. Every vowel in the ſymbol indicates a ſolid angle, marked with the ſame letter as in the nucleus. Every conſonant indicates the edge which has the ſame letter in the figure.

3. Each letter contained in the ſymbol is underſtood with the figure belonging to it to repreſent all the ſame letters, and the angles or edges which have the ſame function.

4. Every number joined to a letter indicates a decrement ſetting out from the angle or the edge denoted by that letter. If the number be a whole one, it indicates the ranges in breadth, ſuppoſing each plate to have only the thickneſs of one molecule. If the number be a fraction, the numerator indicates the number of ranges ſubtracted in breadth, and the denominator the number of ranges ſubtracted in height.

5. The number is placed above the letter to ſhew that the decrement aſcends, or below it to ſhew that it deſcends, ſetting out from the angle or edge marked by the letter. If it be placed either on the right or left hand of the letter, it indicates a decrement to the right or left of the edge or angle marked by the letter.

6. When a letter is twice repeated with the ſame number placed on different ſides, as ${}^2G\ G^2$ or $G^2\ {}^2G$, ${}^2A\ A^2$ or $A^2\ {}^2A$, the two edges or two angles which it marks ſhould be conſidered in the figure in the ſame relative poſitions. Thus, ${}^2G\ G^2$ indicates the effect of decrement by two ranges on the edge G ſituated at the left, and of a ſimilar decrement on the edge G ſituated at the right.

7. When a letter has the ſame number both on the right and left ſide, as ${}^3G^3$, it applies equally to all the edges G. The ſame applies to the letters which denote the angles.

8. The parentheſis, as, for example, $(\overset{3}{O}\ D^1,\ F^2,)$ indicates an intermediate decrement. The letter $\overset{3}{O}$ indicates, that an aſcending decrement of three ranges takes place on the angle O; D^1, that one molecule is ſubtracted along the edge D; and F^2, that two molecules are ſubtracted on the edge F.

9. Every ſmall letter in the ſymbol indicates the angle or the edge diametrically oppoſite to that which has the ſame capital letter in the figure, where the ſmall letter is omitted as ſuperfluous. The letter *e* is, however, never omitted in the rhomboid; it indicates, according to the principle, the letter oppoſite to E.

10. When the large and ſmall letters of the ſame name are introduced into the ſymbol with different numbers attached to them, the two oppoſite edges or angles denoted by theſe letters are conceived to undergo excluſively the law of decrement, indicated by the number attached to the letter.

11. Every letter, whether large or ſmall, marked by a number having a zero attached to it, as $\overset{2.0}{E}$, indicates that the decrement denoted by that number does not take place on the angle or edge which the letter repreſents.

The above account of the theory of cryſtallization, and the notation of cryſtals, may ſuffice with what has been before given under the article Crystal, to convey ample information of the abbé Haüy's ingenious ſyſtem, ſo far as relates to the ſtructure of cryſtals, and the ſymbolic mode of deſcribing the decrements by which the ſecondary cryſtals are formed. The figures in *Plates* II. III. IV. V. VI. *Cryſtallography*, which we have deſcribed, are copied from Haüy's Traité de Minéralogie, tom. i., and contain what he has given in illuſtration of the 'theory of cryſtallization.' The application of geometry and analyſis, to determine the laws of decrement from the meaſurement of the angles, which has been ſo ably made in the above-named work by this illuſtrious cryſtallographer, would require for its explanation a more ample ſpace than would be conſiſtent with the preſent article, which is intended to ſupply what was defective in the explanation of the plates under the article Crystal, and to correct the references that were there erroneouſly given. (See Crystal.) We omitted to ſtate, that *Plate* II. *fig.* 25. repreſents the ſecondary rhomb, *fig.* 24. with the three ſuperior edges, and the three inferior ones cut off or truncated r, r, r, r', r', r'; by cutting other laminæ parallel to each of the faces r, r, r, &c. we ſhall at length extract the primitive nucleus A E, O I, *fig.* 24.

CSHATRIYA, or Chatterie, denotes in India a man of the ſecond or military caſt. See Cast.

CUCKFIELD. In 1811, the pariſh of Cuckfield contained 300 houſes, and 2088 perſons; *viz.* 1063 males, and 1025 females: 251 families being employed in agriculture, and 123 in trade, &c.

CUCKOW-Spit. Add—This cuckow-ſpittle encompaſſes the larva of a ſpecies of cicada, which is denominated C. ſpumaria, or cuckow-ſpit cicada, from the circumſtance of its larva being conſtantly found enveloped in a maſs of white froth adhering to the leaves and ſtems of vegetables. This froth, called cuckow-ſpittle, is found during the advanced ſtate of ſummer, and is the production of the included larva, which, from the time of its hatching from the egg depoſited by the parent inſect, continues occaſionally to ſuck the juices of the ſtem on which it reſides, and to diſcharge them from its vent in the form of very minute bubbles, till it covers itſelf with a large maſs of froth, and it is ſometimes ſo overcharged with moiſture that a drop may be ſeen hanging from its under ſurface. Shaw's Zoology, vol. vi.

CUCULUS, l. 4, add—Dr. Leach, however, obſerves, that this property does not belong to this kind of feet, which can be conſidered merely as ſimple feet, having two toes before and two behind. Col. 2, l. 21, after inſects, add—and on larvæ or caterpillars; l. 35, add—For the natural hiſtory of this bird, ſee Dr. Jenner's curious paper in the Phil. Tranſ. for 1788, pt. ii.

CUD-BEAR. See Lichen *Tartareus*.

CULLUMIA, in *Botany*, dedicated by Mr. Brown, to the honour of the late ſir John Cullum, bart., an elegant and accompliſhed ſcholar and botaniſt; as well as of his brother the preſent ſir Thomas Gery Cullum, bart. F.L.S. an excellent Britiſh botaniſt, one of the moſt ardent cultivators of this lovely ſcience, whoſe friendſhip alone can be more valued than his various and extenſive information.—Br. in Ait. Hort. Kew. v. 5. 137.—Claſs and order, *Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Eſſ. Ch. Receptacle cellular. Seeds ſmooth. Down none. Common calyx of one leaf, covered with imbricated ſcales.

1. C. *ciliaris*. Fringed Cullumia. Ait. n. 1. (Berkheya ciliaris; Willd. Sp. Pl. v. 3. 2273. Gorteria ciliaris; Linn. Sp. Pl. 1284. Carlina foliis imbricatis, &c.; 151. t. 54. f. 1.)—Leaves ovate, ſmooth, imbricated, fringed with a double row of briſtles, and tipped with a reflexed ſpine.

2. C. *ſetoſa*. Recurved ſmooth-leaved Cullumia. Ait. n. 2. (Berkheya ſetoſa; Willd. ibid. excluding Commelin's

lin's syn.)—Leaves ovato-lanceolate, smooth, recurved, fringed with prickles.

3. C. *squarrosa*. Recurved awl-leaved Cullumia. Ait. n. 3. (Berkheya squarrosa; Willd. 2272. "Rohria squarrosa; Thunb. in Act. Soc. Nat. Scrut. Hafn. v. 3. part 1. 100. t. 5.")—Leaves awl-shaped, recurved or spreading, fringed with prickles; furrowed beneath; nearly smooth like the branches.

These are green-house shrubs, with yellow radiant *flowers*, all natives of the Cape of Good Hope.

CULLUMPTON. By the return of 1811, the parish contains 609 houses, and 2917 inhabitants.

CULPEPPER, l. 3, *r.* 1810, 18,967, and 8312.

CULROSS. In 1811, the burgh and parish contained 279 houses, and 1611 persons; *viz.* 725 males, and 886 females: 78 families being employed in agriculture, and 183 in trade, manufactures, and handicraft.

CUMANA, l. 4, *r.* Welsees.

CUMBERLAND, l. 23, *r.* and by the return of 1811, 24,002 houses, and 133,344 inhabitants.

Cumberland, in Maine, l. 7, *r.* 24 townships; l. 9, *r.* 1810, is 42,831.

Cumberland, in New Jersey, l. 5, *r.* 12,678, and 42.

Cumberland, a county of Pennsylvania, l. *ult. r.* 26,757, and 307.

Cumberland, a county of Virginia, l. 3 and 4, *r.* 9992, and 6102.

Cumberland, a county of N. Carolina, l. 2, *r.* 9382, and 2796.

Cumberland, a county of Kentucky, l. 1 and 2, *r.* 6085, and 902.

Cumberland, in Rhode island, l. 2, *r.* 2140.

Cumberland, in Pennsylvania, *r.* 1591. And at the close, after Bedford, add—containing 570 inhabitants.

CUMMINGTON, l. 3, *r.* 1009.

CURCULIO, l. 17, add—Mr. Marsham, in his "Entomologia Britannica," enumerates no fewer than 234 British species; l. 27, add—The larva, when properly fried and boiled, is considered as one of the best dainties in the West Indies. P. 3, C. Granarius, add—See Weevil. P. 5, col. 2, Nucum, add—The various changes which the nut-maggot passes through, from its introduction into the nut in August to its escape, are worthy of attention. Dr. Darwin, in his "Botanical Garden," thus beautifully describes the egress of this insect from the cavity of the nut:

> "So sleeps in silence the curculio, shut
> In the dark chambers of the cavern'd nut;
> Erodes with ivory beak the vaulted shell,
> And quits on filmy wings its narrow cell."

CURD, *Chemical Properties of.* See Milk.

CURIA Claudenda, a writ that lies against him who should fence and inclose the ground, but refuses or defers to do it.

Curia *Advisare vult*, a deliberation which the court sometimes takes, before judgment is given in a cause, with regard to which there seems to be any point of difficulty.

CURRIE, James, M.D., in *Biography*, distinguished both as a physician and a writer, was the son of an established minister at Kirkpatrick-Fleming, in Dumfriesshire, in which parish he was born in the year 1756. Originally designed for commerce, he was educated with that view; but upon a change of his destination, he commenced, in 1776, a course of medical study at Edinburgh: and having graduated in that university, settled, in 1781, at Liverpool, where he soon rose to eminence in his profession and in his literary character. His first performance as a writer was an elegant tribute to the memory of his intimate friend, Dr. Bell of Manchester, published in 1785 in the first volume of the Manchester Transactions. His paper on Tetanus, &c. was published in the Memoirs of the London Medical Society, vol. iii. In 1792 he was elected a member of the Royal Society; and his curious paper on the lamentable effects of a shipwreck was printed in the Phil. Trans. for that year. Disapproving of the war between this country and France in consequence of the revolution, he was supposed to be the author of an interesting pamphlet, which appeared in 1793 under the title of "A Letter, Commercial and Political, addressed to the Right Honourable William Pitt, by Jasper Wilson." In 1797 his medical reputation was much advanced by a treatise in 8vo., entitled "Medical Reports on the Effects of Water, cold and warm, as a Remedy in Febrile Diseases, &c." by which the practice of effusion of cold water in fevers, suggested by Dr. Wright's narrative in the London Journal, was much extended. With a view to the relief of the distressed family of the rustic poet, Robert Burns, with whom he became acquainted in 1792, he published in 1800 an edition of his works, with an account of his life, &c. in 4 vols. 8vo. It is with real regret we farther report, that Dr. Currie's health began to decline in 1804, and that his friends and patients at Liverpool were deprived of the pleasure of his society and advice by his removal, towards the close of the year, to Clifton and Bath. His disorder, which was of the pulmonary kind, somewhat abated in consequence of the change of his situation, and at the commencement of the following year he began to practise in his profession with encouraging prospects of success. But it again recurred with alarming symptoms, and he was under a necessity of removing to Sidmouth, where his valuable life terminated on the 31st of August, 1805, in the 50th year of his age. The cause of literature and science, and the interests of humanity and benevolence, suffered great loss by his death.

CURVO, in *Geography*, a township of America, in the district of Maine, and county of Somerset, containing 275 inhabitants.

CUSERUND, a town of Mekran in Persia, situated in a fertile valley, about 21 miles broad, with a river running through it. It contains 500 huts, and a large mud fort. Wheat, rice, and dates, are abundant; and the town belongs to an independent chief, whose revenue is about 1000 rupees a year.

CUSHING, l. 3, *r.* 532.

CUTIS, *Chemical Properties of.* See Integuments.

CYANOGEN, in *Chemistry*, the name given by M. Gay Lussac to the recently-discovered basis of the prussic acid, and which he has demonstrated to be a compound of carbon and azote. The name is derived from κυανος, *blue*. Cyanogen may be obtained by exposing dry prussiate of mercury in a small retort, to a heat rather under redness. The salt blackens, and a gaseous fluid is extracted in abundance, which must be collected over mercury. This gas is cyanogen. It is colourless, and possesses the mechanical properties of common air. Its smell is quite peculiar, and very strong and disagreeable. Its specific gravity, as ascertained by Gay Lussac, is 1.8064. It is inflammable, and burns with a purplish-blue flame. It is not decomposed by exposure to a red heat. Water dissolves $4\frac{1}{2}$ times its volume, and alcohol 23 times its volume of this gas. It reddens tincture of litmus. Phosphorus, sulphur, and iodine, may be volatilized in it without alteration. Potassium burns in it, and absorbs it. For complete combustion, it requires twice its volume of oxygen gas; and the products are twice its volume of carbonic acid, and its own volume of azotic gas. Hence it is obviously

obviously composed of two atoms or volumes of carbon, and one atom or volume of azote, or *per cent.* of

Carbon - - -	70.0
Azote - - -	30.0
	100.0

See Atomic *Theory*, Table III.

Cyanogen is capable of combining with chlorine, and forming an acid which has been named *chlorocyanic* acid. It also combines with hydrogen, forming *hydrocyanic* acid; with sulphur, forming *sulphocyanic* acid; and with iron, forming *ferrocyanic* acid: of each of which acids we shall here give a brief account.

Chlorocyanic Acid. — This is the *oxyprussic* acid of Berthollet, who first demonstrated its existence. Its properties were afterwards more thoroughly investigated, and its true composition pointed out by M. Gay Lussac, who gave it the above name. The acid was formed by M. Gay Lussac by passing a current of chlorine gas through a solution of hydrocyanic acid (prussic acid, see below) in water, till the liquid discoloured indigo dissolved in sulphuric acid. To separate the excess of chlorine, the mixture was agitated with mercury. The chlorocyanic acid was subsequently separated by an ingenious process. A glass cylinder, filled two-thirds with mercury, was filled to the brim with the above mixture, and then inverted into a basin of mercury. The apparatus was put under the receiver of an air-pump, and the exhaustion carried on till the whole of the mercury and liquid was displaced, and the cylinder filled with chlorocyanic acid in a state of vapour. On letting the air again into the receiver the vapour was condensed into a liquid, and thus collected upon the surface of the mercury in the cylinder. Chlorocyanic acid thus obtained is a colourless liquid, having a strong and peculiar odour, which excites such irritation as to induce a flow of tears. It reddens litmus, is not inflammable, and does not detonate when mixed with hydrogen or oxygen. Its solution in water does not precipitate nitrate of silver, nor barytes water. The alkalies absorb it rapidly, but it requires an excess of them to destroy its odour completely. It throws down iron from its solution of a green colour. But some of its compounds appear of a very permanent nature. Gay Lussac has shewn that this acid is a compound of one atom or volume of cyanogen, and one atom or volume of chlorine, united together without change of bulk. Hence it will be composed *per cent.* of

Cyanogen - -	41.93
Chlorine - - -	58.07
	100.00

And its specific gravity in a state of vapour will be 2.152.

Hydrocyanic Acid. — This was formerly denominated Prussic *Acid*; which see. Hydrocyanic acid may be prepared in the manner pointed out in the above article; but the method more lately recommended by Gay Lussac consists in decomposing the prussiate of mercury by means of muriatic acid in a retort with heat. The products are to be passed through a tube two feet long, the first one-third of whose length is to be filled with fragments of marble, to retain the muriatic acid that may come over, and the remaining two-thirds with dry muriate of lime. A small receiver covered with ice is to be adapted to the end of this tube in which the hydrocyanic acid may be collected on application of a moderate heat to the retort. The properties of this acid are correctly described under Prussic *Acid*. It is a most virulent poison. From Gay Lussac's experiments, it appears to be composed of one atom or volume of cyanogen, and one atom or volume of hydrogen, united together without condensation. Hence it is composed *per cent.* of

Cyanogen - - -	96.3
Hydrogen - - -	3.7
	100.0

And the specific gravity of its vapour will be .9367.

Hydrocyanic acid cannot be preserved for any length of time without undergoing decomposition, ammonia is formed, and a quantity of charry matter is deposited. Iodine volatilized in this acid suffers no change. Oxygen decomposing it with combustion. Chlorine displaces the hydrogen, and forms chlorocyanic acid. Neither azote, hydrogen, carbon, boron, silica, nor phosphorus, have any known action upon it. Sulphur decomposes it, appearing to displace the hydrogen and combine with the cyanogen, and thus forming sulphocyanic acid. Potassium, sodium, potash, soda, and barytes, combine with the cyanogen and liberate the hydrogen. The vapour of hydrocyanic acid is decomposed when passed through red-hot iron or platina; also when passed through the peroxyd of copper. The peroxyd of manganese completely absorbs the vapour of hydrocyanic acid in a few hours, water is formed, but cyanogen is not evolved. When the red oxyd of mercury is heated in hydrocyanic acid vapour, so much heat is evolved from the violent action that takes place that the compound is destroyed. If heat be not applied, the vapour is absorbed by the oxyd, and when the compound is afterwards submitted to heat, water is disengaged, and the cyanide, or *prussiate* of mercury, as it was formerly termed, is left behind. See further under Prussic *Acid*.

Sulphocyanic Acid. — This is the *sulphuretted chyazic* acid of Mr. Porrett, who discovered it in 1808. It may be formed by dissolving one part of sulphuret of potash in water, and boiling in this solution three or four parts of prussian blue, added at intervals. Sulphuret of iron is formed, and a colourless neutral liquid containing a considerable quantity of sulphocyanic acid combined with potash. This liquid is then to be rendered decidedly acid by sulphuric acid, and the mixture kept at the boiling point for some time. When cold, a little peroxyd of manganese is to be added, which will give to the solution a fine crimson colour. This crimson liquid is to be filtered, and a solution composed of two parts of the persulphate of copper and three of the protosulphate of iron is to be added, till the crimson colour disappears. A copious white precipitate, composed of sulphocyanic acid and protoxyd of copper, takes place. The copper may be separated by boiling with a solution of potash, and the sulphocyanate of potash thus formed afterwards decomposed by sulphuric acid; the sulphocyanic acid may be then obtained by distillation in a retort. If any sulphuric acid adheres to it, this is to be separated by a little carbonate of barytes.

Sulphocyanic acid thus formed is a transparent colourless liquid, having an odour as strong, and somewhat resembling acetic acid. Its specific gravity when most concentrated was 1.022. According to Mr. Porrett's analysis, it is composed of

Sulphur - - -	65.2
Hydrocyanic acid -	34.8
	100.0

Dr. Thomson seems inclined to consider this acid as composed pofed of cyanogen and fulphur, but it is probable that Mr. Porrett's view of its compofition will be hereafter found correct.

The *fulphocyanates* of potafh, foda, ammonia, barytes, ftrontian, lime, and magnefia, are all deliquefcent falts foluble in alcohol. The fulphocyanate of foda, lime, barytes, and ftrontian, are capable of cryftallizing, the others are not. The fulphocyanate of alumina is not deliquefcent, and readily cryftallizes. The fulphocyanate of the protoxyd of iron is colourlefs, and very foluble. The fulphocyanate of the peroxyd of this metal is of a beautiful crimfon colour, deliquefcent, and does not cryftallize, and this is one of the moft ftriking characteriftics of this acid. The fulphocyanate of the peroxyd of copper is a white powder infoluble in water and moft acids. The other falts are not remarkable, and confequently poffefs little intereft. The following is a fhort account of fome of the falts formed by this acid.

Ferrocyanic Acid; the Ferruretted Chyazic Acid of Mr. Porrett its Difcoverer.—This is the acid which combines with different bafes, and forms what were formerly denominated *triple pruffiates*, iron being fuppofed to form part of their bafe, whereas Mr. Porrett has demonftrated that this metal forms a conftituent of the acid itfelf. This acid may be obtained by the following fimple procefs:—Diffolve in cold water any quantity of the *triple pruffiate of barytes*, and for every ten grains of the falt add about 2.5 grains of real fulphuric acid, agitate the mixture and fet it afide fome time. The barytes will be precipitated in union with the fulphuric acid, and leave the ferrocyanic acid in folution in the water. When obtained, it has a pale lemon colour, and is deftitute of fmell. It is decompofed by a gentle heat and expofure to a ftrong light, hydrocyanic acid being formed, and the white triple pruffiate of iron depofited. When combined with the different bafes, it forms at once the falts formerly termed triple pruffiates. It difplaces acetic acid from all its combinations without heat, and difplaces all other acids when it forms infoluble compounds with the bafes to which they were united. Mr. Porrett, from his analyfis, concludes that this acid is compofed of

Hydrocyanic acid	- -	63.79
Black oxyd of iron	- -	36.21
		100.00

Dr. Thomfon, however, from analogy, is difpofed to confider it as a compound of cyanogen and iron, but it is probable that Mr. Porrett's views are correct. Moft of the *ferrocyanates* have been already defcribed under the different bafes, by the old name of the *triple pruffiates*. For the moft important of thefe, or the *triple pruffiate* of *iron*, fee Iron and Prussian *Blue*.

CYATHODES, in *Botany*, κυαθωδης, *cup-like*, alluding to the fhape of the nectary.—Labill. Nov. Holl. v. 1. 57. Brown Prodr. Nov. Holl. v. 1. 539.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eff. Ch. Calyx five-cleft, with numerous fcales at the bafe. Corolla funnel-fhaped; tube fcarcely longer than the calyx, naked and fmooth within; limb fpreading. Filaments within the tube. Drupa pulpy. Nut with five or ten cells.

Stem fhrubby, erect, branched, fometimes almoft arborefcent. *Leaves* ftriated at the back. *Flowers* axillary, erect, or flightly drooping, fmall. *Nectary* a five-toothed cup-fhaped difk, beneath the *germen*.

Mr. Brown differs from Labillardiere in his ideas of the fpecies which properly belong to this genus. He defines fix New Holland fpecies. 1. *C. glauca*, Labill. t. 81; 2. *C. ftraminea*; 3. *C. dealbata*. All thefe have fome degree of hairinefs on the *corolla*. 4. *C. parvifolia*; 5. *C. oxycedrus*, (Styphelia oxycedrus, Labill. t. 69.); and 6. *C. abietina*, (Styphelia abietina, Labill. t. 68.) Thefe have a fmooth *corolla*. *Ardifia acerofa*, Gærtn. t. 94, belongs to this fecond fection, and Mr. Brown has feen three South-fea fpecies in fir Jofeph Banks's herbarium.

The prefent genus ftands between Melichrus and Lisanthe; fee thofe articles.

CYATHUS, κυαθος, *a cup*, Perf. Syn. Fung. 236, a genus of rather fmall *Fungi*, to which fome botanifts have given a ftill more expreffive name, *Nidularia*, (fee Sowerb. Fung. t. 29.) The whole plant confifts of a leathery cup, containing feveral lenticular bodies, fuppofed to contain the feeds, and all together refembling a bird's neft with eggs. Perfoon has feven fpecies.

CYCLOPIA, from κυκλος, *a circle*, and πους, *a foot*, becaufe of the circular fold round the ftalk of the legume.—Venten. Dec. Gen. Nov. 8. Brown in Ait. Hort. Kew. v. 3. 5. (Ibbetfonia; Sims in Curt. Mag. 1259.)—Clafs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Calyx five-cleft, unequal; intruded at the bafe. Corolla papilionaceous; ftandard furrowed lengthwife; wings with a tranfverfe plait. Stamens deciduous. Stigma bearded at one fide. Legume compreffed, with many feeds.

1. C. *geneftoides*. Narrow-leaved Cyclopia. Ait. n. 1. (Sophora geniftoides; Linn. Sp. Pl. 534. Podalyria geniftoides; Willd. Sp. Pl. v. 2. 502. Ibbetfonia geniftoides; Curt. Mag. t. 1259. Gompholobium maculatum; Andr. Repof. t. 427.)—Leaflets awl-fhaped, pointlefs as well as the calyx. Bracteas oblong-ovate, fhorter than the flower-ftalks. Young branches fmooth.—Native of the Cape of Good Hope. A bufhy *fhrub*, denfely clothed with ternate, feffile, narrow, fmooth *leaves*. The *flowers* are axillary, large, yellow, with crimfon ftreaks at the bafe of the *ftandard*.

Of the remaining fpecies we have no account.

CYNODON, from κυων, *a dog*, and οδων, *a tooth*, a genus founded by fome authors on the *Panicum Dactylon* of Linnæus, a grafs known in moft of the temperate or warm parts of the globe, to which Mr. Brown adds two tropical New Holland fpecies. See his Prodr. v. 1. 187. This genus is clofely related to the *Chloris* of Swartz. See Pănicum, at the end of fect. 1. of that article.

CYNTHEANA, in *Geography*, a town of Kentucky, in Harrifon county, containing 369 inhabitants, of whom 116 are flaves.

CYRTOSTYLIS, in *Botany*, from κυρτος, *curved*, or *convex*, and στυλις, *the ftyle*, or *column*.—Brown Prodr. Nov. Holl. v. 1. 322.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx ringent, pointlefs. Petals fpreading, nearly equal to the lower calyx-leaves. Lip diffimilar, direct, flat, obtufe, undivided, with two callofities at the bafe. Anther a terminal permanent lid; the cells clofe together. Maffes of pollen two in each cell, powdery, compreffed.

1. C. *reniformis*.—Gathered by Mr. Brown, at Port Jackfon, New South Wales. Habit like Acianthus, (fee that article,) to which this plant is perhaps too near akin. *Leaf* kidney-fhaped, many-ribbed. *Flowers* generally turned, or, in one fenfe, reverfed. Malaxis *lilifolia* (fee that article, n. 11.) is thought by Mr. Brown to approach this plant in ftructure of *flowers*, though different in habit. We have already obferved how imperfectly that fpecies, with our *Cordifolia* and *Loefelii*, anfwer to *Malaxis*.

CYSTANTHE,

CYSTANTHE, from κυστις, *a bladder*, and ανθη, *a flower*, expreffing the appearance of the corolla.—Brown Prodr. Nov. Holl. v. 1. 555.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eff. Ch. Calyx leafy. Corolla clofed, like a lid, fplitting tranfverfely; the torn bafe permanent. Stamens inferted into the receptacle, permanent. Nectariferous fcales none. Capfule with many feeds; receptacles pendulous from the top of the central column.

1. C. *fprengeliana*.—Native of Van Diemen's ifland. A *fhrub*, refembling *Sprengelia*, *Ponceletia*, and *Cofmelia*, except the *branches* being marked with annular fcars after the fall of the *leaves*. A fhort-leaved variety grows on the mountain tops, but on their fhady fides the plant bears more elongated, fpreading, recurved *leaves*.

CYSTITIS. Inflammation of the bladder is rarely a primary difeafe, but generally comes on as a confequence of fome other affection in the neighbouring parts; or of lithotomy, accidental injuries, &c. The fymptoms attending it are, tenfion and pain over the pubes, with a frequent defire to make water, difficulty in voiding it, or a total retention, with tenefmus and fever.

The treatment recommended for NEPHRITIS is here alfo applicable. In particular, venefection, leeches to the hypogaftric region, the warm bath, aperient medicines, and emollient clyfters, muft be employed. When the bladder and peritoneum inflame after wounds, or the furgical operation of lithotomy, blifters are often of great fervice; but bleeding fhould be firft practifed. In chronic inflammation and thickening of the bladder, the fymptoms and pain may be allayed with anodyne emollient clyfters, which are far better than injections into that organ itfelf. Opium, cicuta, hyofcyamus, the uva urfi, &c. with a perpetual blifter, may alfo be tried.

CYSTOTOMY, CYSTOTOMIA, from κυστις, *the bladder*, and τεμνω, *to cut*, the operation of cutting into the bladder. See LITHOTOMY.

D.

Vol. XI.

DAGESTAN, l. 2, after Afia, infert—almoft entirely mountainous, as its name implies.

DAGOTI. See GAUTHIER.

DALIBARDA, in *Botany*, a genus originally dedicated by Kalm and Linnæus to M. Dalibard, author of the *Floræ Parifienfis Prodromus*, claffed in the Linnæan method.—Linn. Gen. ed. 5. 217. Sp. Pl. ed. 1. 491.—It was afterwards reduced to *Rubus*, but is fince reftored by Michaux and others. (See the two fpecies under RUBUS, n. 54 and 55.) The fpecific names of Michaux are inadmiffible, for feveral reafons.

DALTON, col. 2, l. 15, after government, *dele* to houfes in l. 18, and infert—in 1811, the parifh of Dalton in Furnefs contained four townfhips; *viz.* Dalton having 156 houfes, and 643 inhabitants; Hawcoat having 107 houfes, and 583 inhabitants; Ireleth with 75 houfes, and 445 inhabitants; and Yarlefide with 68 houfes, and 403 inhabitants.

DALTON, in America, l. 3, *r.* 779; l. 7, for Grafton *r.* Coos; l. 8, for 62 *r.* 235.

DALTONIA, in *Botany*, fo named in juft commemoration of the Rev. James Dalton, F.L.S., an eminent Britifh botanift.—Hook. and Tayl. Mufc. Brit. 80. t. 3.—However defirous we may be to admit this genus, it affords a frefh proof in fupport of the opinion we have always maintained, that the inner fringes of Moffes give, in general, no found generic characters. Nothing can be lefs exclufively allied than the two fuppofed fpecies, either in habit or character. They are, *Neckera fplachnoides*, Engl. Bot. t. 2564; and *N. heteromalla*, Hedw. Crypt. v. 3. t. 15. Engl. Bot. t. 1180. The teeth of their *inner fringe*, it feems, want the flight connecting bafe, more or lefs vifible in feveral fpecies of NECKERA (fee that article), and are attached, fcarce vifibly, to the teeth of the *outer fringe*.

DAMASONIUM, Schreb. Gen. 242. Willd. Sp. Pl. v. 2. 276. Ait. Hort. Kew. v. 2. 331. Brown Prodr. Nov. Holl. v. 1. 344. See STRATIOTES, n. 4.

DAMGAN. See SUMNUM.

DAMPIERA, in *Botany*, dedicated by Mr. Brown, to the memory of William Dampier, the famous navigator, who firft brought one of the fpecies, *D. incana*, Br. n. 7, from the weft coaft of New Holland, along with feveral other fpecimens preferved at Oxford, the earlieft botanical tribute from that remote country.—Br. Prodr. Nov. Holl. v. 1. 587.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Goodenoviæ*, Br.

Eff. Ch. Corolla two-lipped; tube fplit at one fide; fegments of the upper lip auricled at their inner margin. Anthers clofely combined. Cover of the ftigma naked at the edge. Nut inferior, cruftaceous, with a folitary kernel. Dry, downy, perennial *herbs*, or *fhrubs*, with undivided, alternate, often toothed, coriaceous *leaves*. *Flowers* blue or *purple*. *Calyx* fmall, or none. *Stamens* permanent, fheathing the *ftyle*.

Thirteen fpecies, from various parts of New Holland, are defcribed, among which is D. *ftricta*, Goodenia ftricta; Sm. Tr. of L. Soc. v. 2. 349. Willd. Sp. Pl. v. 1. 955.

DANA. Add—containing 625 perfons.

DANBURY, l. 3, *r.* 345; l. 8, *r.* 3606.

DANBY, l. 2, *r.* 1730.

DANTHONIA, in *Botany*, fo named by M. De Candolle, after M. Danthon, a French botanift, is a genus feparated by that eminent writer, in his *Flore Françaife*, v. 3. 32, from *Avena*, on account of the three awns to the outer valve of the *corolla*, and, as far as we can perceive, for no other reafon. He is however followed by Mr. Brown, Prodr.

Prodr. Nov. Holl. v. 1. 176, who defines eight New Holland species, and mentions having gathered ten or more in Southern Africa; but with a hint that this genus is too near to *Avena*, which it almost entirely resembles. The *awn* being acknowledged very treacherous in grasses, we would presume to offer another hint, that Anisopogon (we wish to say nothing of Diplopogon and Amphipogon, see those articles,) may possibly require revision.

DANVERS, l. *ult. r.* 3127.

DANVILLE, l. 6, *r.* 432 and 166; l. 9, *r.* 2240.

DAOURIAN. See Nertskinskoi.

DARABGERD. Add—Although a great part be in ruins, it is said to contain between 15,000 and 20,000 inhabitants. It is beautifully situated on an extensive plain, and surrounded with groves of orange and almon trees, the juice of which is exported to every part of Persia. Its tobacco is highly esteemed for its mildness.

DARBY. Add—The former containing 966, and the latter 1085 inhabitants.

DARIEN. Add—It contains 107 inhabitants, of whom 10 are slaves.

DARK-Rays, l. 17, *r.* see Heat and Rays *of Heat*.

DARLINGTON, l. 6 from bottom, after Darlington, insert—ward, consisting of three divisions, contained 7184 houses, and 39,001 persons; 18,725 being males, and 20,276 females: and the township of Darlington contained 818 houses, and 5059 persons; 2351 being males, and 2708 females.

Darlington, in Carolina. Add—It contained, in 1810, 9047 inhabitants, of whom 2731 are slaves.

DARRYFIELD. Add—See Deerfield.

DARTAN, in *Rural Economy*, a kind of scabs or ulcers to which lambs are subject, and which extending to the mouth often prove fatal. The remedy proposed is washing the sores with vinegar, and applying a salve made with equal parts of tar and hog's-lard.

DARTFORD, col. 1, l. *ult. r.* 1811; col. 2, l. 1, *r.* 526 and 3177.

DARTMOUTH, l. 31, after houses, insert—in the parishes of St. Petrox, St. Saviour, and Townstall, which form the borough of Clifton Dartmouth Hardness, was 364 houses, and that of inhabitants 3595.

Dartmouth, in America, l. 9, for 2660 *r.* 3219.

DARWINIA, in *Botany*, in memory of the late Erasmus Darwin, M.D. the elegant poet, and ingenious botanical physiologist; see that article.—Rudge Tr. of Linn. Soc. v. 11. 299.—Class and order, *Decandria Monogynia*. Nat. Ord. . . . .

Eff. Ch. Calyx none. Corolla tubular, funnel-shaped, tumid, with five marginal imbricated segments. Stamens concealed, inserted in two rows into the throat. Anthers kidney-shaped. Germen somewhat oblique. Style prominent. Stigma simple.

1. D. *fascicularis*. Ibid. t. 22.—Found in New South Wales, by sir Joseph Banks and Dr. Solander. A branched *shrub*, with crowded needle-like *leaves*, and terminal dense tufts, of elegant, small, red *flowers*.

DASYPOGON, from δασυς, *thick and bristly*, and πωγων, *a beard*.—Brown Prodr. Nov. Holl. v. 1. 263.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Junceæ?* Br.

Eff. Ch. Calyx inferior, tubular, three-cleft. Petals three, with long claws, connected with the stamens. Anthers incumbent. Stigma simple. Capsule of one cell, not bursting, invested with the hardened calyx.

1. D. *bromeliifolius*. Br. n. 1. Terr. Austr. 76. t. 8.—Found on the shores of King George's sound, New Holland. *Herb* one and a half or two feet high, somewhat shrubby, with rigid, simple, sharply and finely toothed *leaves*. *Flowers* in a dense, globular, bristly head. The figure seems to exhibit three *seeds*.

DATOLITE. See Mineralogy, *Addenda*.

DAVENTRY, l. 2, *r.* Fawsley; l. 4 and 5, insert—51 Geo. III., 534 houses, and 2758 inhabitants.

DAVID's, St. col. 2, l. 3, insert after act—51 Geo. III. In 1811, the number of houses for the parish, containing four hamlets, was 437, and that of inhabitants 1816.

DAVIDSON, l. 2, insert—West Tennessee; l. 6, *r.* 15,608, and 6305.

DAUM, or Dam, a copper coin in India, equal in value to the fourth part of a rupee.

DAUPHIN, in America, l. 6, for nine *r.* fifteen; l. 8, for 22,270 *r.* 31,883, of whom, in 1810, 26 were slaves.

DAWLISH. Add—By the returns in 1811, the parish of Dawlish contained 328 houses, and 1882 persons.

DAWSONIA, in *Botany*, a new and most curious genus of Mosses, dedicated, by Mr. Brown, to our valued friend Mr. Dawson Turner, an eminent English botanist, particularly distinguished by his cryptogamic writings.—Br. Tr. of Linn. Soc. v. 10. 316.—Class and order, *Cryptogamia Musci*. Nat. Ord. *Musci*.

Eff. Ch. Fringe a tuft of very numerous, straight, equal hairs, originating from the central column, as well as from the mouth of the capsule. Outer veil of entangled hairs: inner rough at the summit. Capsule flat at one side.

1. D. *polytrichoides*. Br. t. 23. f. 1.—Found by Mr. Brown, on the shady banks of rivers, at the foot of the mountains, near Port Jackson, New South Wales. This moss exactly resembles some of our larger species of Polytrichum, (see that article,) while the figure of the *capsule* approaches *Buxbaumia*. The *fringe* is totally unlike every thing previously known. The *leaves* are linear, flat, fringed with sharp teeth.

DAYTON. Add—It contains 1746 persons.

DEAL, col. 3, l. 14, *r.* 7351, and 1340.

DEAN, Michel. In 1811 the parish contained 121 houses, and 535 persons; *viz.* 270 males, and 265 females: 31 families being employed in agriculture, and 77 in trade, &c.

DEBENHAM, l. *ult. r.* 167 and 1224.

DECADIA, in *Botany*, a tree of Amboina and Cochinchina, so named by Loureiro on account of its ten petals.—Loureir. Cochinch. 315. (Arbor aluminosa; Rumph. Amb. v. 3. 160. t. 100. Loureiro moreover cites Bobu; Burm. Zeyl. 26, which is also Laurus serrata, floribus spicatis, ex foliorum alis provenientibus; ibid. 139. t. 62; Eugenioides; Linn. Zeyl. 192: but this does not agree with the plant of Rumphius.)—Class and order, *Icosandria Monogynia*, according to Loureiro, but by his description it belongs to *Polyandria*. Nat. Ord. *Guttiferis affine*. It seems nearly allied to *Elæocarpus*.

Gen. Ch. *Cal.* Perianth of three permanent, roundish, hairy, keeled, spreading, unequal leaves. *Cor.* Petals ten, nearly ovate, somewhat serrated, erect, longer than the calyx; the outer ones largest. *Stam.* Filaments about 30, almost as long as the petals, into whose bases they are inserted; anthers two-lobed, roundish, permanent. *Pist.* Germen roundish, superior; style thread-shaped, the length of the stamens; stigma rather thick. *Peric.* Drupa ovate, rugged, small. *Seed* an ovate nut, of three cells.

Eff. Ch. Calyx of three leaves, inferior. Petals ten. Drupa with a nut of three cells.

1. D. *aluminosa*, called in Cochinchina *Cây Deung se*, is the only species. This is a middling-sized *tree*, with a smooth bark and spreading branches. *Leaves* alternate, stalked, lanceolate, serrated, smooth, of a bright green. *Flowers*

Flowers in ſmall, nearly ſimple, cluſters, about the ends of the branches, white, minute. Rumphius relates that the bark and leaves, which may be preſerved dry for the purpoſe, are of great uſe, inſtead of alum, in dyeing, to improve and fix the red colours afforded by ſeveral Indian woods and roots.

DECAGON. Add—See DODECAGON.

DECANDRIA, in *Botany*, from δεκα, *ten*, and ανηρ, *a man*, the tenth claſs of the ſexual or artificial ſyſtem of Linnæus, containing ſuch plants as have ten ſeparate or diſtinct ſtamens, in the ſame flower with the piſtil. Hence it admits ſeveral papilionaceous plants ſo circumſtanced, notwithſtanding their natural affinity to others which belong to the ſeventeenth claſs, *Diadelphia*, the latter containing only ſuch as have ſome ſort of union or combination in their filaments, and thoſe filaments are moreover of a peculiarly flat membranaceous ſtructure, altogether different from thoſe of proper decandrous flowers. (See DIADELPHIA.) The tenth claſs is divided into five orders, and compriſes various natural tribes or families, many of which have allies in other parts of the ſyſtem, and ſeveral of the genera have ſpecies whoſe parts of fructification are irregular in number.

DECASPORA, from δεκα, *ten*, and σπορα, *ſeed*.—Brown Prodr. Nov. Holl. v. 1. 548.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*. Br.

Eſſ. Ch. Calyx with two ſcales at the baſe. Corolla bell-ſhaped; limb looſely bearded. Stamens prominent. Berry with ten ſeeds.

A genus of elegant *ſhrubs*, found on the ſouth coaſt of New Holland, with ſcattered ſtalked *leaves*, and terminal drooping *ſpikes* of red *flowers*. *Berries* violet.

1. D. *diſticha*, (Cyathodes diſticha; Labill. Nov. Holl. t. 82.), and 2. D. *thymifolia*, are all the ſpecies mentioned.

DEDDINGTON. In 1811, the pariſh contained 252 houſes, and 1296 perſons; 635 being males, and 661 females.

DEDHAM. In 1811, the pariſh contained 264 houſes, and 1432 perſons; 697 being males, and 735 females.

DEEPING-MARKET. In 1811, the pariſh contained 166 houſes, and 899 perſons; 426 being males, and 473 females.

DEER, in America, l. 2, *r*. 674. Add—Alſo, a townſhip of Weſtmoreland county, in Pennſylvania, having 2380 inhabitants.

DEER *Creek*, a town of Ohio, in the county of Pickaway, having 853 inhabitants.

DEER *Iſle*, col. 2, l. 1, *r*. 1057.

DEERFIELD, l. 10, *r*. 1570; l. 16, *r*. 1851. Add—Alſo, a town of Ohio, in Portage county, having 394 inhabitants.—Alſo, a town of Ohio, in Roſs county, having 629 perſons.—Alſo, a town of Ohio, in Warren county, having 1181 perſons.

DEERING, l. 3, *r*. 1363.

DEERINGIA, in *Botany*, in memory of Charles Deering, M. D., author of the *Flora Nottinghamenſis*, a botaniſt commended by Dillenius.—Brown Prodr. Nov. Holl. v. 1. 413.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juſſ.

Eſſ. Ch. Calyx in five deep ſegments. *Cor*. none. Stamens united by an entire membrane. Anthers of two cells. Style deeply three-cleft. Berry ſuperior, with many ſeeds.

1. D. *celoſioides*. Br. n. 1. (Celoſia baccata; Retz. Obſ. faſc. 5. 23. Willd. Sp. Pl. v. 1. 1202.)—Native of New Holland and the Eaſt Indies. A ſmooth weak *ſhrub*, with alternate *leaves*. *Spikes* axillary and terminal. *Bracteas* three to each flower. *Fruit* pulpy, tumid.

DELAGOA, col. 2, l. 8, *r*. Kaffers.

DELAWARE. Add—See UNITED STATES.

DELAWARE *County*, l. 4, *r*. 14,734.—In New York, l. 2, *r*. 20,303 inhabitants, 55 in 1810 being ſlaves.

DELAWARE *Townſhip*, l. 2, *r*. 472. Add—Alſo, a townſhip in Mercer county, in Pennſylvania, having 218 inhabitants.—Alſo, a county of Ohio, containing ſeven townſhips, and 2000 inhabitants.—Alſo, a townſhip of the ſame county, having 200 inhabitants.

DELI, a river of Perſia, in Schirvan, which has its ſource in the Leſgean hills, and diſembogues into the Caſpian ſea, about 20 miles S. of the Samur.

DELMER, a townſhip of Tioga county, in Pennſylvania, having 884 inhabitants.

DELOS, col. 6, l. 21, *r*. ruin.

DEMBEA, col. 2, l. 16, *r*. Gorgora.

DE MURIS, JOHN, for MURIS, JOHN DE.

DENBIGH, col. 2, l. 45 and 46, *r*. 617 and 2714.

DENBIGHSHIRE, col. 2, l. 22, *r*. and 13,078 houſes, inhabited by 64,240 perſons; 31,129 being males, and 33,111 females: of whom 3447 families are employed in trade and manufactures, and 7973 in agriculture.

DENMARK, a town of America, in the diſtrict of Maine, and county of Oxford, containing 436 inhabitants.

DENNIS, l. 4, *r*. 1739.

DEPTFORD, col. 3, l. 24, *r*. 1811, 19,833; l. 25, *r*. 3463.

DEPTFORD, in America, l. 2, add—containing 2978 inhabitants.

DERAGUZ, a diſtrict of Khoraſſan, which, as well as that of Cotchung, is ſituated between Meſhed and Merv. Cotchung is governed by an independent chieftain, who can bring into the field 12,000 men, and who reſides in the town of Cotchung, 23 furſungs from Meſhed. The diſtrict of Deraguz touches on the W. the dependencies of Kelat; on the N. the country of the Turkomans of Tak, ſometimes called Attok; and on the E. a branch of the Aſhdur Koh. It is the property of Lutf Ali Khan, whoſe ſubjects are reckoned the braveſt and moſt polite of the natives of Khoraſſan; and the ſoil which they inhabit is ſo fruitful, that dry grain yields a hundred, and rice four hundred fold.

DERBANE, a beautiful little river which riſes in the ſtate of Louiſiana, and has its principal ſource in N. lat. 32° 50′. W. long. 93° 10′, and purſues nearly an eaſtern courſe of 60 miles, entering Ouachitta from the weſt. It is navigable about one-half of its courſe for large boats. Its water, which is very pure, is ſupplied from numerous ſprings by many creeks, that are bordered by fine land.

DERBY, col. 6, l. 5 from the bottom, *r*. 2644, and 13,043.

DERBY, in America, in the cenſus of 1810, probably called Derley by miſtake. It has 114 inhabitants.—L. *ult*. *r*. 2051. Add—Alſo, a townſhip of Ohio, in Madiſon county, having 257 inhabitants.—Alſo, a townſhip of Ohio, in the county of Pickaway, having 475 inhabitants.

DERBY. See DARBY.

DERBYSHIRE, l. 12 and 13, *r*. 35,658, and 185,487.

DEREHAM, EAST, l. 4 and 5, *r*. 551 houſes, and 2888 inhabitants.

DEREHAM, *Weſt*, a pariſh in the hundred of Clackcloſe, having 58 houſes, and 428 inhabitants.

DERLEY. See DERBY.

DERRY, in America, l. 4, *r*. 2431; l. 5, 1341; l. 7, 2283; l. 8, 2380.

DESERT Island, *Mount*. Add—Mount Defert contains 1047 inhabitants. See Eden.

DESMANTHUS, in *Botany*, fo called by the late profeffor Willdenow, who firft feparated the genus we are about to defcribe from Mimosa; fee that article, and Acacia of the prefent volume. This name feems to be compofed of δεσμα, *a bandage*, and ανθος, *a flower*; alluding perhaps to the ftrap-like filaments of the neutral flowers, common to every fpecies.—Willd. Sp. Pl. v. 4. 1044. Ait. Hort. Kew. v. 5. 457.—Clafs and order, *Polygamia Monoecia*; or rather perhaps *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminofæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, with five teeth. *Cor.* of one petal, funnel-fhaped, regular, more or lefs deeply five-cleft, fometimes of five petals. *Stam.* Filaments ten, rarely but five, capillary, equal, very long; anthers incumbent, oblong. *Pift.* Germen fuperior, ovate-oblong; ftyle thread-fhaped, the length of the ftamens; ftigma dilated, abrupt. *Peric.* Legume oblong, compreffed, of two flat valves, and one cell, feparated into feveral by tranfverfe oppofite ftrictures in the valves. *Seeds* numerous, oblong, ftalked. Several flowers, below the perfect ones, are neuter, having dilated lanceolate *ftamens*, without *anthers*, no efficient *piftil*, and fometimes no *corolla*.

Eff. Ch. Calyx five-toothed. Corolla deeply five-cleft. Stamens definite. Piftil one. Legume of two valves. Some flowers neuter, with dilated, flat, abortive ftamens.

Obf. Although the definition of this genus is not fo ftriking as could be wifhed, it feems to us tolerably natural, being diftinguifhed from *Acacia* by the definite number of its *ftamens*, always twice as many as the divifions of the *corolla*, and by the prefence of feveral neuter flowers, in the lower part of each tuft, or fpike, known by their dilated, ftrap-fhaped *filaments*, deftitute of *anthers*, and more or lefs different in colour from the perfect flowers. We are neverthelefs aware, that generic characters founded on fuch anomalies or imperfections, are always the leaft folid; thefe neutral flowers, apparently created for no end, being doubtlefs liable to become, according to circumftances, perfect in one organ of impregnation or the other. The habit of the genus before us is pretty uniform, having doubly pinnate *leaves*, with numerous, oblong, obtufe, crowded *leaflets*; axillary, folitary, ftalked, oblong *fpikes*, of crowded taffel-like *flowers*; and flat, generally broad, elliptic-oblong, fmooth *legumes*, whofe tranfverfe ftrictures make them refemble the jointed fruit of what now remains as *Mimofa*, but their valves do not fplit at thofe ftrictures. As only ten fpecies of *Defmanthus* are defcribed, we fhall give the whole. They are all of tropical origin; partly herbaceous, and fometimes annual, with fenfitive leaves; partly fhrubby.

Sect. 1. *Without thorns.*

1. D. *lacuftris*. Lake Defmanthus. Willd. n. 1. ("Mimofa lacuftris; Humb. and Bonpl. Pl. æquinoct. t. 16.")—"Thorns none. Firft divifion of the leaves of three pair; fecond of many pair. Spikes ovate. Stalks bracteated. Stem round, creeping."—Native of marfhes in South America. *Root* perennial. *Stem* herbaceous. Firft divifions of the *leaves* an inch and a half long. *Leaflets* numerous, linear, obtufe at each end. *Spikes* barren in their lower part, each fupported by a ftalk longer than the foliage, furnifhed with two or three ovato-lanceolate deciduous *bracteas*. *Legume* oblong, pointed, with from four to fix *feeds*. Very nearly related to the following. *Willdenow.*

2. D. *natans*. Floating Defmanthus; or Aquatic Senfitive. Willd. n. 2. Ait. n. 1. Andr. Repof. t. 629. (Mimofa natans; Vahl Symb. v. 3. 102. Roxb. Coromand. v. 2. 11. t. 119. M. orientalis non fpinofa, rarioribus ramis, floribus fpicatis; Pluk. Almag. 252. Phyt. t. 307. f. 4. Neptunia oleracea; Loureir. Cochinch. 654. "Niti-todda-vaddi; Rheede Hort. Malab. v. 9. 35. t. 20.")—Thorns none. Firft divifion of the leaves of three pair; fecond of many fmooth-edged leaflets. Spikes oblong, interrupted. Stalks moftly without bracteas. Stem round, floating, with tufted roots from the lower joints.—Native of frefh-water lakes, pools, and flow ftreams, in the Eaft Indies, Cochinchina, &c. Loureiro fays it is cultivated in the laft-mentioned country, as an ingredient in falads, being tender and agreeably fweetifh, though not very falutary to the ftomach. The plants are tied to ftakes, to prevent their being carried away with the ftream. The *root* is annual, entirely floating, as well as the round, fmooth, branched, leafy *ftems*, whofe lower joints fend forth tufts of compound radicles, their interftices being often fwollen, or fpongy, at one fide, as if to render the herb more buoyant. *Leaves* alternate, ftalked, doubly pinnate, fmooth, bright green; fecondary divifions from one to two inches long, each of twelve or thirteen pair of elliptical, entire *leaflets*, which fold together flowly when touched; their edges fmooth. *Stipulas* membranous, half-ovate, or heart-fhaped, obtufe. Common *flower-ftalks* generally naked; fometimes furnifhed with a *bractea* or two. *Spike* oblong, more or lefs crowded. *Corolla* greenifh. Abortive *filaments* of the lower *flowers* large, lanceolate, yellow, very confpicuous. *Legumes* five or fix from each fpike, an inch in length, purplifh-brown, fmooth, elliptic-oblong, pointed. *Seeds* oval, from four to eight, forming a central row, inferted by a flender thread alternately to each margin of the legume. Kœnig fent fpecimens of the following to Linnæus, but not, as far as we can difcover, of the prefent fpecies; while the information he communicated regarded both fpecies, which poffibly he might originally confound, thinking the *triquetrus* a variety caufed by growing out of the water. However this might be, his *natans* is certainly the prefent plant, to which alone that name can apply.

3. D. *triquetrus*. Triangular-ftalked Defmanthus. Willd. n. 3. (Mimofa triquetra; Vahl Symb. v. 3. 102. M. natans; Linn. Suppl. 439.)—Thorns none. Firft divifion of the leaves of two or three pair; fecond of many rough-edged leaflets. Stipulas pointed. Spikes globofe. Stalks bracteated. Stems proftrate; triangular in their upper part.—Native of the dry borders of fields at Tranquebar. *Kœnig* in the Linnæan herbarium. *Root* woody, perennial. *Stems* feveral, from a fpan to a foot or more in length, herbaceous, proftrate, rather zigzag, leafy, fmooth, fomewhat glaucous, fcarcely branched; nearly round at the bottom, but triangular above. *Leaves* about half the fize of the former, on much fhorter ftalks, and effentially diftinguifhed, if we miftake not, by the roughnefs of their edges, caufed by fmall clofe-preffed briftles. The *ftipulas* are obliquely ovate, ribbed, with a tapering briftly point, which we do not find in *D. natans*. *Flower-ftalks* not much longer than the leaves, each bearing one or more broad clafping *bracteas*. *Spikes* fhort and roundifh. *Legumes* elliptic-oblong, obtufe, with four, five, or fix *feeds*.

4. D. *plenus*. Semi-double Yellow Defmanthus. Willd. n. 4. Ait. n. 2. (Mimofa plena; Linn. Sp. Pl. 1502. M. foliis duplicato-pinnatis, fpicarum floribus inferioribus plenis, caule inermi procumbente; Linn. Hort. Upf. 145. n. 3. M. non fpinofa, paluftris et herbacea, procumbens, flore luteo pleno; Rel. Houft. 10. t. 23. M. n. 2; Mill. Ic. v. 2. 122. t. 182. f. 2.)—Thorns none. Firft divifion of the leaves of three or four pair; fecond of numerous oblong fmooth-edged leaflets. Spikes ovate. Stalks bracteated. Stem

Stem proftrate, compreffed. Stamens five.—Gathered in ftagnant waters at Vera Cruz by Dr. Houftoun, who fent feeds to Miller. The latter records that the *ftems*, though naturally floating, grew more erect when the plant was cultivated on dry ground. The *root* is annual, according to Willdenow, Aiton, and Linnæus, who had this fpecies in the ftove at Upfal. *Stems* herbaceous, fmooth, a little zigzag, a foot or two in length, floating or decumbent, flightly branched. *Leaves* fenfitive, larger than thofe of *D. natans*. *Stipulas* acute, obliquely and broadly ovate. *Spikes* as large as Common Clover, yellow, recurved, on *ftalks* nearly as long as the leaves, bearing two diftant, ovate, fheathing *bracteas*. *Stamens* but five, thofe of many of the lower *flowers* changed to long lanceolate petal-like leaves, which give the flowers a double appearance, and render them truly fo, according to the analogy of flowers in general. Hence the fpecific name given by Linnæus; but this circumftance is common to the whole genus of *Defmanthus*, as above defcribed. In this and fimilar cafes it feems beft to retain the original name, as indicating the firft known fpecies, and therefore the hiftory of the genus. The *legume* is drawn by Houftoun elliptic-oblong, flightly curved, with a furrow, or double edge, along the back. *Seeds* numerous, ovate. The *leaves* are fenfitive in this and the three preceding.

5. D. *depreffus*. Depreffed Defmanthus. Willd. n. 5.—"Thorns none. Firft divifion of the leaves of two pair; fecond of eight or ten pair of linear obtufe leaflets. Spikes capitate, of a few decandrous flowers. Legumes linear. Stem proftrate."—Found by Humboldt and Bonpland, in South America. *Root* woody, perennial. *Stems* feveral, from a fpan to a foot long, diffufe, fmooth; branched and round at the bottom; obfcurely quadrangular above. *Spikes* ftalked, without *bracteas*. *Legume* an inch and a half long, pointed, with many *feeds*. Akin to the two following, as to the fhape of the *fpike* and of the *legume*, though eafily diftinguifhable by the fpecific characters. *Willdenow*.

6. D. *diffufus*. Proftrate Defmanthus. Willd. n. 6. Ait. n. 3. (Mimofa pernambucana; Linn. Sp. Pl. 1502. M. inermis decumbens, foliis duplicato-pinnatis, fpicis cernuis, floribus pentandris, inferioribus caftratis; Linn. Hort. Upf. 145. n. 4. M. americana pigra, filiquis longis anguftis, allium olentibus; Pluk. Amag. 252. t. 307. f. 3.)—"Thorns none. Firft divifion of the leaves of four or five pair; fecond of twelve pair. Spikes capitate, of a few pentandrous flowers. Legume linear. Stem proftrate."—Native of South America. *Stem* fhrubby. Willdenow, who had examined dried fpecimens, fays this fpecies is extremely fimiliar to the following, but differs in having moft commonly five primary divifions in the *leaves*, a proftrate *ftem*, and only five *ftamens*. We have never feen the prefent fpecies, which probably has not appeared in the gardens fince Miller's time, but we venture to transfer the fynonym of Zanoni to the next, on account of the upright ftem of his plant. Hence the Linnæan fpecific name *pernambucana*, taken from Zanoni, becomes peculiarly unfuitable, and is fortunately changed by Willdenow.

7. D. *virgatus*. Upright Angular Defmanthus. Willd. n. 7. Ait. n. 4. (Mimofa virgata; Linn. Sp. Pl. 1502. Jacq. Hort. Vind. v. 1. 34. t. 80. M. fpuria di Pernambuco, detta Mimofa italica; Zanon. Ift. 151. t. 60. M. inermis, foliis duplicato-pinnatis, filiquis linearibus glabris; Linn. Hort. Cliff. 209.)—Thorns none. Firft divifion of the leaves of four pair; fecond of twelve pair. Spikes capitate, of a few decandrous flowers. Legume linear. Stem erect, angular.—Native of South America, where Jacquin obferved it in various places; and not of the Eaft Indies, Burmann's *M. virgata* being probably our *D. natans*, at leaft according to the fynonyms of Plukenet and Rheede, cited by that author. The late profeffor Jacquin fent feeds of this prefent fpecies to Kew, in 1774, where it flowers in the ftove in July and Auguft. His plant is precifely that of Linnæus, mentioned in the *Hortus Cliffortianus* as of American origin, but confounded with feveral other things in his *Fl. Zeylanica*, 216, n. 505. *D. virgatus* has an erect fhrubby *ftem*, with wand-like *branches*, angular when young, but lefs fo as they become older. *Stipulas* briftle-fhaped, with a round auricle. Common *footftalks* with a round depreffed gland between the firft pair of fubdivifions. *Leaflets* linear, obtufe, fringed, glaucous beneath. *Flower-ftalks* the length of the leaves, erect, with fmall deciduous *bracteas* near the top. *Heads* flightly drooping while young, pale or whitifh. Several of the lowermoft *flowers* furnifhed with ten linear, very narrow, almoft thread-fhaped, abortive filaments, in the place of ftamens. *Anthers* of the upper *flowers* roundifh, yellow. *Legumes* about five from each head, almoft erect, full two inches long, linear, not one-eighth of an inch broad, acute, thick-edged, fmooth. *Seeds* very numerous, elliptic-oblong, obliquely difpofed in a central row. Miller's remark, cited by Willdenow, after Linn. Mant. 2. 503, does not belong to this fpecies, and is excluded by Linnæus himfelf in his MSS. Probably it may relate to *D. plenus*.

8. D. *punctatus*. Spotted-ftalked Defmanthus. Willd. n. 8. Ait. n. 5. (Mimofa punctata; Linn. Sp. Pl. 1502. M. frutefcens media inermis, filiquis compreffis falcatis et umbellatis, pedunculo longiffimo; Browne Jam. 253. Aefchynomene mitis prima; Comm. Hort. v. 1. 61. t. 31.)—Thorns none. Firft divifion of the leaves of four or five pair; fecond of many. Spikes ovate. Flower-ftalks bracteated at the bafe. Legume oblong, obtufe, wavy.—Native of Jamaica, from whence it was introduced very early into the European ftoves. Our fpecimen was fent by Dr. Browne to Linnæus. The *ftem* is befprinkled with fmall callous points. *Branches* angular. *Leaves* a fpan long, with a gland on the common *footftalk* between the firft pair of wings. *Leaflets* about twenty pair, fenfitive, linear-oblong, fmooth, obtufe with a fmall point. *Flower-ftalks* fcarcely fo long as the leaves, each bearing, near the bafe, two large ovate, or heart-fhaped, *bracteas*. *Spike* drooping, ovate, of numerous, crowded, pale *flowers*, the lower ones with thin lanceolate *petals*, in the place of the ten *ftamens* of the more abundant upper ones. *Legumes* about three from each fpike, ftalked, horizontal, compreffed, oblong, obtufe at each end, with a fmall terminal point; their length an inch and a half; breadth one-third of an inch. They betray an inclination to fplit acrofs, like the true *Mimofæ*. *Seeds* about twelve, ovate. This fpecies does indeed, as Willdenow obferves, much refemble *D. plenus*; but is neverthelefs much too different to be confounded therewith.

Sect. 2. *Thorny*.

9. D. *cinereus*. Afh-coloured Defmanthus. Willd. n. 9. Ait. n. 6. (Mimofa cinerea; Linn. Sp. Pl. 1505. Roxb. Coromand. v. 2. 39. t. 174. M. n. 215; Linn. Fl. Zeyl. 96. Acacia fpinofa, ex alis fpicata, foliis pennas avium referentibus; Burm. Zeyl. 3. t. 2. A. maderafpatana, minutiffimis foliis, aculeis ferocibus, alternis, frondofa; cortice itidem cinereo; Pluk. Almag. 3. Phyt. t. 121. f. 5.)—Branches becoming folitary fpines. Firft divifion of the leaves about nine pair; fecond of many. Spikes folitary, cylindrical, drooping; tapering at the bafe. Legumes linear, curved.—Native of the Eaft Indies; in forefts and low barren lands, according to Dr. Roxburgh, who obferves that the wood is remarkably hard, but, owing

owing to the smallness of the tree, of little use. Miller cultivated this plant at Chelsea in 1739, and it is marked by Mr. Aiton, as flowering in the stove about June and July. A low, irregular, rigid *shrub*, with a grey bark, and zigzag *branches*, whose short, alternate, lateral shoots spread horizontally, and each finally becomes tipped with a hard sharp thorn. These branches bear very fine and delicate foliage, whose very minute oblong *leaflets* are smooth above, hairy at the back, and appear to be sensitive; their *common stalk* also is hairy. *Spikes* axillary, stalked, an inch or two long, swelling upward, obtuse, dense, and many-flowered. Perfect *flowers* numerous, yellow, with ten *stamens*, whose *anthers* are ovate, of two cells, and tipped with a small round gland. The lower *flowers*, less numerous, are pale rose-coloured, abortive, having ten linear, obtuse, strap-like leaves instead of stamens. *Legume* falcate, linear, compressed, but not flat, about three inches long, and one-fourth of an inch broad, smooth, obtuse. *Seeds* ten to fifteen, oblong, yellow.

10. D. *divergens*. Spreading-branched Desmanthus. Willd. n. 10. ("Ergett Dimmo; Bruce's Travels, v. 5. 34, with a plate.")—"Branches becoming solitary spines. First division of the leaves of eight pair; second of many. Spikes in pairs, cylindrical, pendulous. Legume twisted." —Native of Abyssinia? A *shrub*, six feet high, with divaricated furrowed branches, besprinkled with white warts. First divisions of the *leaves* from six to nine pair. *Leaflets* numerous, linear, angular at the base, and fringed at the edges. *Thorns* rigid, straight, awl-shaped, sometimes in pairs. *Legume* linear, contorted. Willdenow, who made this description from a living specimen, says the gardeners call this species *Mimosa divaricata*. But what is so denominated in Donn's *Hort. Cant.* ed. 5. 240, comes from Carolina, and, as far as we can discover, does not occur in *Hort. Kew.* Bruce's figure above quoted was thought by Willdenow to answer exactly to his own garden shrub, except the want of thorns; but as these occur on the older branches only, they might be overlooked. We have not seen specimens of either Bruce's or Willdenow's plant.

DETROIT. Add—The civil district of Detroit, which is one of the divisions of the territory of Michigan, contains, by the census of 1810, 2227 inhabitants, of whom 17 were slaves.

DEVAUXIA, in *Botany*, so named by Mr. Brown, in honour of M. Desvaux, author of a dissertation on the natural family of *Junci*, in the *Journal de Botanique*. M. Labillardiere had previously published this same genus under the appellation of *Centrolepis*, from κεντρον, *the centre*, and λεπις, *a scale*; which, giving an erroneous idea of the structure of the flower, it was found necessary to change.—Brown Prodr. Nov. Holl. v. 1. 252. (Centrolepis; Labill. Nov. Holl. v. 1. 7.)—Class and order, *Monandria Polygynia*. Nat. Ord. *Restiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of two concave, keeled, permanent, alternate valves, clasping each other at the base, containing an indefinite number of flowers. *Cor.* of two oblong, membranous valves, sometimes accompanied by small accessory scales. *Stam.* Filament one, capillary, drooping, rather longer than the largest valve of the corolla; anther simple, oval. *Pist.* Germens several, from three to twelve, ovate-oblong, superior, inserted into one side of a central oblong receptacle, and all turned one way; styles as many, thread-shaped, either distinct at the bottom or combined, spreading or deflexed at the summit; stigmas linear, downy. *Peric.* Capsules as many as the germens, membranous, oval, of one valve and one cell, bursting along one side. *Seed* solitary, obovate, pendulous.

Eff. Ch. Sheath of two valves, with several flowers. Corolla of two membranous valves. Anther simple. Germens unilateral. Capsules bursting longitudinally, at one side. Seed solitary.

This genus, of which we have already spoken as akin to Alepyrum, (see that article,) consists of small herbaceous plants, growing in tufts, and resembling the lesser species of *Scirpus*. The *roots* are fibrous and tufted. *Stem* none. *Leaves* radical, bristle-shaped, half sheathing at the base. *Flower-stalks* radical, thread-shaped, undivided, naked. *Sheath* solitary, terminal, its valves either awned or not. Nine species are described by Mr. Brown, as follows.

Sect. 1. *Receptacle scaly.*

1. D. *pulvinata*. Cushion Devauxia.—Receptacle scaly. Styles six or seven, distinct. Sheath pointless; lower valve rather hispid; upper smooth. Leaves nearly as tall as the flower-stalks.—Gathered by Mr. Brown, in Van Diemen's island.

2. D. *Patersoni*. Paterson's Devauxia. (Centrolepis æmula; Rudge Tr. of Linn. Soc. v. 10. 284. t. 12. f. 2.) —Receptacle scaly. Styles eight or nine, distinct. Sheath pointed, many-flowered; upper valve nearly smooth; lower hispid. Adult flower-stalks hairy, as well as the leaves, which are only one-third as tall.—Gathered by Col. Paterson and Mr. Brown, near Port Jackson, New South Wales. *Leaves* very narrow, an inch long. *Flower-stalks* above two inches high. *Sheath* tumid, scarcely rising above the *flowers*.

3. D. *strigosa*. Bristly Devauxia.—Receptacle scaly. Styles from five to seven, distinct. Sheath pointed; both valves hispid. Adult flower-stalks smooth, thrice as long as the finely hispid leaves.—Found by Mr. Brown, on the southern coast of New Holland.

Sect. 2. *Receptacle without scales. Sheaths hispid.*

4. D. *tenuior*. Slender Devauxia.—Receptacle naked. Styles four or five, combined at the base. Sheath almost pointless, bristly as well as the leaves. Flower-stalk slightly hairy.—Found in the island of Van Diemen, by Mr. Brown.

5. D. *Billardieri*. Labillardiere's Devauxia. (Centrolepis fascicularis; Labill. Nov. Holl. v. 1. 7. t. 1. C. cuspidigera; Rudge Tr. of Linn. Soc. v. 10. 283. t. 12. f. 1.)—Receptacle naked. Styles two or three, combined at the base. Sheath bristly; with awns nearly as long as the valves. Leaves rather hairy. Stalks smooth.—Native of Port Jackson, as well as of Van Diemen's island. *Brown*, *Labillardiere*. The numerous bristle-shaped *leaves* are about an inch and a half long, erect; those which clasp the base of each *flower-stalk*, which is half as tall again, are toothed at their inner margin towards the base. *Valves* of the *sheath* twice as tall as the *flowers*. *Corolla* toothed, obtuse.

6. D. *exserta*. Prominent-flowered Devauxia.—Receptacle naked. Styles from seven to ten, distinct. Sheath pointless, bristly, not quite so long as the flowers. Stalks and leaves downy.—Gathered by Mr. Brown, in the tropical part of New Holland.

Sect. 3. *Receptacle without scales. Sheaths smooth.*

7. D. *Banksii*. Banksian Devauxia.—Receptacle naked. Styles from eight to ten. Sheath pointless, very smooth, many-flowered, membranous at the edges. Stalks three or four times the length of the leaves.—Gathered by sir Joseph Banks, in the tropical part of New Holland.

8. D. *pusilla*. Little Devauxia.—Receptacle naked. Styles six or seven. Sheath pointless, very smooth, membranous at the edges, with but few flowers. Stalks and leaves

leaves both smooth, and nearly equal in length.—Observed by Mr. Brown, in the tropical part of New Holland.

9. D. *aristata*. Awned Devauxia.—Receptacle naked. Styles six or seven, combined at the base. Sheath smooth, with longish awns. Stalks two-edged.—Found by Mr. Brown on the southern coast of New Holland.

Mr. Rudge, very commendably anxious to retain, if possible, Labillardiere's original generic name, has, by taking κεντρον for a *prickle*, as it undoubtedly means a *point*, or *sharp spike*, made *Centrolepis* to express *a prickly scale*, alluding to the hispid *sheaths* of some species. But this is not apposite, the scales, or glumes of the *flower*, to which the original name applied, being, in no sense, pointed, or prickly; nor do we see that this name can be forced into any appropriate meaning, the *scales* being acknowledged on all hands not to be central.

DEVIZES, col. 2, l. *penult*. *r*. 696, and 3750.

DEVONSHIRE, col. 6, l. 11 and 12, *r*. 62,318, and 383,308.

DEW. To this article we shall subjoin some appropriate remarks, selected from an "Essay on Dew, &c." by the ingenious Dr. Wells, lately (*viz*. 1819) republished in an edition of his works, to which is prefixed a Memoir of his life written by himself. To this author it occurred in 1784, that the formation of dew is attended with the production of cold. The same opinion was announced in 1788 by Mr. Wilson of Glasgow (vol. i. Edinb. Trans.), and also by Mr. Six of Canterbury (Phil. Trans. for 1788, and in a posthumous work printed at Canterbury in 1794.) All these writers at first concurred in regarding the cold which accompanies dew as an effect of the formation of that fluid. Dr. Wells, however, upon mature consideration of the subject, was led to suspect that this opinion was erroneous; and his suspicion was afterwards justified by a variety of observations and experiments. Although Dr. Wells agrees, in general, with Aristotle and other writers, and maintains that dew appears only on calm and serene nights, yet this opinion is not universally true; for he frequently found a small quantity of dew on grass, both on windy nights, if the sky was clear or nearly so, and on cloudy nights, if there was no wind; but he never perceived dew on nights both cloudy and windy. Dew, he says, probably begins, in this country, to appear upon grass, shaded from the sun, during clear and calm weather, soon after the heat of the atmosphere has declined; and it continues to form, in shaded places, after sun-rise; the interval between sun-rise and its ceasing to form being considerably shorter than that between its first appearance in the afternoon and sun-set. If the weather be favourable, however, more dew forms a little before, and in shaded places a little after sunrise, than at any other time; whereas Muschenbroeck asserts, that dew does not form after the sun has risen. Our author also maintains, in opposition to the opinion of M. Prieur, that dew, after it has once commenced, continues during the whole night, if the weather remain still and serene. During nights that are equally clear and calm, whether they be longer or shorter, dew often appears in very unequal quantities; the quantity of moisture in the atmosphere serving to increase the production of dew; and, accordingly, in equally clear and calm nights, dew is more abundant soon after rain than during a long continuance of dry weather: it is also more abundant in Europe, and in some parts of Asia and Africa, with southerly and westerly winds, than with those which blow from the north and the east. Another circumstance upon which the quantity of dew depends, is the diminution of the weight of the atmosphere; for though the falling of the mercury in the barometer is commonly attended with wind or clouds, both unfavourable to the production of dew, yet the greatest dew observed by our author occurred while the barometer was sinking. M. De Luc also has observed, that rain may be foretold when dew is uncommonly abundant in relation to the climate and season. We have already observed, that dew is commonly more plentiful in spring and autumn than in summer, a fact which our author also has noticed; it is always very copious on clear and calm nights which are followed by misty or foggy mornings; and on a clear morning which succeeds a cloudy night. Heat of the atmosphere, if other circumstances are favourable, occasions a great formation of dew; and upon the supposition of the same clearness and stillness of the atmosphere, more dew is formed between midnight and sun-rise than between sun-set and midnight; the cold of the atmosphere being greater in the latter than in the former part of the night. Our author's experiments serve to shew, that various differences with regard to situation, mechanical state, and real nature of bodies, have a very considerable influence upon the production of dew. As to situation he observes, that whatever diminishes the view of the sky, as seen from the exposed body, diminishes the quantity of dew that is produced; thence the quantity is greater when the exposure to the sky is more complete. There are other circumstances, regarding situation, which serve to augment or diminish the quantity of dew that is produced, when the substances that are used for indicating it are the same.

It is observed farther, that when other circumstances are similar, a difference in the mechanical state of bodies has an effect with regard to the quantity of dew which they attract; and hence it is, that fine raw silk, fine unwrought cotton, and flax, were found to attract more dew than the wool employed by our author in his experiments; the fibres of wool being thicker than those of the other substances just mentioned. Bright metals also attract dew much less powerfully than other bodies: this fact was observed by Muschenbroeck and Dufay; but they erroneously asserted, that dew never appears on the upper surface of bright metals. There are others, and our author in particular, who have known dew to be formed on gold, silver, copper, tin, platina, iron, steel, zinc, and lead. This inaptitude of metals to attract dew is communicated to bodies of a very different nature, which touch or are near to them. Wool, says our author, laid upon a metal, will acquire much less dew than an equal quantity laid upon grass in the immediate vicinity. It is maintained, that the upper surfaces of metals are most readily and most copiously dewed on those nights and in those parts of the night, during which other substances are the most readily and the most copiously dewed. All metals, our author remarks, do not resist the formation of dew with the same force. "I saw," he says, "for example, platina one night distinctly dewed, while gold, silver, copper, and tin, though similarly situated, were entirely dry; and I have also several times seen these four metals free from dew, while iron, steel, zinc, and lead, were covered with it."

Our author proceeds to investigate and ascertain the degree of cold connected with the formation of dew. Mr. Wilson, he thinks, is the first philosopher who ever suspected the existence of such a conjunction; though dew is often spoken of as cold by our popular writers. Herodotus mentions it as possessing this quality; Cicero and Virgil apply to it the epithet of "gelidus;" Milton that of "chill;" and Collins that of "cold." With thermometers adapted to the purpose, he has, in serene and still nights, examined the temperature of dewed grass, and constantly

ſtantly found it to be leſs than that of the air, any where between one inch and nine feet above the ground, the latter being the greateſt height at which he ever marked the heat of the atmoſphere in theſe experiments. At the height of four feet above the ground, and in calm and clear nights, he frequently found the graſs ſeven, eight, or nine degrees colder than the air at that height; ſeveral times it was 10° and 11°, and once 12°, colder than the air. In ſome few obſervations, the greater coldneſs of graſs than that of the air began to appear, in clear and calm weather, in places ſheltered from the afternoon ſun, and yet open to a conſiderable portion of the ſky, ſoon after the heat of the atmoſphere had declined. A ſimilar coldneſs continued upon graſs in ſtill and ſerene mornings, for ſome time after the riſing of the ſun, in places ſhaded from its direct light, but otherwiſe open to the ſky. In cloudy nights, particularly with wind, the graſs was never much colder than the air. Sometimes the temperatures were the ſame; at other times that of the graſs was higher, even when it had been wetted by preceding rain, and when it muſt have cooled by evaporation. When the night changed from clear to cloudy, though without change as to calmneſs, a conſiderable alteration in the temperature of the graſs always enſued, and this change occurred ſometimes very ſuddenly. On one night, the graſs, after having been 12° colder than the air, became 2° colder, the temperature of the air at both obſervations being the ſame. On a ſecond night, the graſs became 9° warmer in an hour and a half. On a third night, in leſs than forty-five minutes the temperature of the graſs roſe 15°, while that of the neighbouring air increaſed $3\frac{1}{2}$°. On a fourth night, the temperature of the graſs at half-paſt 9 o'clock was 32°; in twenty minutes afterwards it was found to be 39°, the ſky in the mean time having become cloudy. At the end of twenty minutes more, the ſky being clear, the temperature of the graſs was again 32°. On the connection of fog or miſt with cold, Dr. Wells made ſeveral experiments, which we cannot recite. He obſerves, that he has always found on dewy nights the temperature of the earth half an inch or an inch beneath its ſurface much warmer than the graſs upon it; and the earth at this depth was alſo almoſt conſtantly warmer on dewy nights than the air. Metals, ſays our author, furniſh proofs of the connection of dew with cold in the ſubſtances on which it forms ſuperior to that of the neighbouring atmoſphere. Upon the whole, our author's experiments, which we cannot minutely detail, ſhew, that when bodies which had been equally expoſed to the night air were examined at the ſame time, thoſe which were moſt dewed were the coldeſt. In the proſecution of experiments with other ſubſtances beſides graſs, he found that thoſe of the filamentous downy kind were the moſt productive of cold. Thus, wool of moderate fineneſs, very fine raw ſilk, very fine unſpun cotton, fine flax, and ſwan-down, were not only more ſteadily cold, upon clear and calm nights, than graſs, but alſo gave riſe to a greater degree of cold than was almoſt at any time obſerved upon it even in its beſt ſtate. Wool produced the leaſt cold, and we have found before, that it attracted leſs dew than ſilk, cotton, and flax. Freſh, unbroken ſtraw, and ſhreds of white paper, were found to be a little more productive of cold than wool. The next claſs conſiſted of bodies in the ſtate of powder; theſe were, clean river ſand, glaſs, chalk, charcoal, lamp-black, and a brown calx of iron. Chalk produced the leaſt, and the three laſt ſubſtances produced the greateſt cold. Solid ſubſtances, expoſing to the ſky a ſurface of at leaſt twenty-five inches ſquare, formed a third claſs, on which our author made experiments. The ſubſtances of this deſcription ſubjected to trial were, glaſs, brick, cork, oak-wood, and wax; all of which were found inferior to the filamentous ſubſtances. His principal experiments, however, of this kind were made on ſnow.

The next ſubject to which Dr. Wells directs his attention is the theory of dew. According to Ariſtotle among the ancients, and many philoſophical writers among the moderns, dew is a ſpecies of rain, formed in the lower atmoſphere, in conſequence of its moiſture being condenſed by the cold of the night into minute drops. But opinions of this kind have been found erroneous, by the conſideration of a fact firſt noticed by Gerſten in 1733; *viz.* that bodies a little elevated in the air often become moiſt with dew, while ſimilar bodies, lying on the ground, remain dry, though neceſſarily, from their poſition, as liable to be wetted, by whatever falls from the heavens, as the former. It was ſoon afterwards obſerved by Muſchenbroeck, that metals will be free from dew, while other bodies attract it copiouſly: hence Dufay concluded, that dew is an electrical phenomenon, ſince it leaves untouched the bodies which conduct electricity, whilſt it appears upon thoſe which cannot tranſmit that influence. Againſt this hypotheſis ſeveral objections have been urged, however plauſibly it has been ſupported. It has been alleged that charcoal, which next to the metals is the beſt ſolid conductor of electricity, attracts dew very powerfully; and dew, as we have ſeen above, frequently forms upon metals themſelves. It has alſo been urged againſt this hypotheſis, that dew forms in different parts of the night, in quantities diſproportioned to the degrees of electricity found in the atmoſphere at the ſame time. Thus, it is commonly more copious in the morning than in the evening, though the air is obſerved to be, in the latter ſeaſon, more highly electrical than in the former. But another argument applies alike to all the theories which have hitherto been made public on the cauſe of dew; and this is, that none of them include the important fact, that its production is attended with cold. Mr. Wilſon and Mr. Six have indeed maintained, that the formation of this fluid is the cauſe of the cold that accompanies it. Dr. Wells once held the ſame opinion; but finding that bodies would ſometimes become colder than the air without being dewed, and that when dew was formed, its quantity, and the degree of cold which appeared with it, were very far from being always in the ſame proportion to each other, he firſt doubted its truth, and at length became convinced that it was erroneous; and by farther inquiry he was led to conclude, that dew is the production of a preceding cold in the ſubſtances upon which it appears; and that it has preciſely the ſame immediate cauſe as the preſence of moiſture upon the outſide of a glaſs or metallic veſſel, when a liquid conſiderably colder than the air has been poured into it ſhortly before. This fact is applied by our author, to the explanation of ſeveral atmoſpherical appearances.

"I. The variety in the quantities of dew, which were found by me upon bodies of the ſame kind, expoſed to the air during the ſame time of the night, but in different ſituations, is now ſeen to have been occaſioned by the diverſity of temperature, which exiſted among them.

"II. Agreeably to the opinion of Mr. Wilſon and Mr. Six, the cold connected with dew ought always to be proportional to the quantity of that fluid; but this is contradicted by experience. On the other hand, if it be granted, that dew is water precipitated from the atmoſphere, by the cold of the body on which it appears, the ſame degree of cold, in the precipitating body, may be attended with much, with little, or with no dew, according to the exiſting ſtate of the air in regard to moiſture; all of which circumſtances are found actually to take place.

"III. The

"III. The formation of dew, indeed, not only does not produce cold, but like every other precipitation of water from the atmofphere, produces heat.

"IV. In very calm nights, a portion of air, which comes in contact with cold grafs, will not, when the furface is level, immediately quit it, more efpecially, as this air has become fpecifically heavier than the higher, from a diminution of its heat, but will proceed horizontally, and be applied fucceffively to different parts of the fame furface. The air, therefore, which makes this progrefs, muft at length have no moifture to be precipitated, unlefs the cold of the grafs which it touches fhould increafe. Hence in great meafure is to be explained, why, on fuch nights as have been juft mentioned, more dew was acquired by fubftances placed on the raifed board, than by others of the fame kind on the grafs, though it began to form much fooner in the latter than in the former fituation, thofe on the raifed board having received air, which had previoufly depofited lefs of its moifture.

"A reafon is now alfo afforded, why a flight agitation of the atmofphere, when very pregnant with moifture, fhould increafe the quantity of dew; fince frefh parcels of air will hence be more frequently brought into contact with the cold furface of the earth, than if the atmofphere were entirely calm.

"V. Dew, in agreement with the immediate caufe which has been affigned by me for its production, can never be formed, in temperate climates, upon the naked parts of a living and healthy human body, during the night; fince their heat is never lefs in this feafon, in fuch climates, than that of the atmofphere. I have, in fact, never perceived dew on any naked part of my own body at night, though my attention was much occupied, for three years, with every thing relative to this fluid, and though I had been, during that period, much expofed to the night air. On the other hand, in very hot countries, the uncovered parts of a human body may fometimes, from being confiderably colder than the air, condenfe the watery vapour of the atmofphere, and hence be covered with a real dew, even in the day-time.

"VI. Hygrometers formed of animal or vegetable fubftances, when expofed to a clear fky at night, will become colder than the atmofphere; and hence, by attracting dew, or, according to an obfervation of Sauffure, by merely cooling the air contiguous to them, mark a degree of moifture, beyond what the atmofphere actually contains. This ferves to explain an obfervation made by M. De Luc, that in ferene and calm weather, the humidity of the air, as determined by an hygrometer, increafes about, and after fun-fet, with a greater rapidity, than can be attributed to a diminution of the general heat of the atmofphere."

Having eftablifhed the fact, that bodies become colder than the neighbouring air, before they are dewed, and applied this fact to the explication of many atmofpherical appearances, we fhall now proceed with the author to complete the inveftigation of his theory with refpect to the caufe of dew; and hence he avails himfelf of the difcoveries on heat and its radiation, that have been made by profeffor Leflie, Dr. Herfchel, and count Rumford. (See HEAT.) "The experience of moft perfons," fays Dr. Wells, "refpecting the communication of heat among bodies in the open air, is confined to what happens during the day; at which time, thofe that are fituated near to one another are always found to poffefs the fame temperature, unlefs fome very evident reafon for the contrary fhould exift. To many, therefore, it may appear incredible, that a perfectly dry body, placed in contact, on all fides, with other bodies of the fame temperature with itfelf, fhall afterwards, without undergoing any chemical change, become much colder than they are, and fhall remain fo for many hours; yet thefe circumftances are found to occur in fubftances attractive of dew, when laid on the furface of the earth, in a ftill and ferene night, and are in perfect agreement with the doctrine of heat, now univerfally admitted to be juft.

"To render this more eafy of apprehenfion, let a fmall body which radiates heat freely, and poffeffes a temperature, in common with the atmofphere, higher than 32°, be placed, while the air is clear and ftill, on a flow conductor of heat lying on the furface of a large open plain, and let a firmament of ice be fuppofed to exift at any height in the atmofphere; the confequence muft be, that the fmall body will, from its fituation, quickly become colder than the neighbouring air. For, while it radiates its own heat upwards, it cannot receive a fufficient quantity from the ice to compenfate this lofs; little alfo can be conveyed to it from the earth, as a bad conductor is interpofed between them; and there is no folid, or fluid except the air, to communicate it laterally either by radiation or conduction. This fmall body, therefore, unlefs it fhall receive from the air, nearly as much heat as it has emitted, which, confidering the little that can be communicated from one part of the atmofphere to another, in its prefent calm ftate, muft be regarded as impoffible, will become colder than the air, and condenfe the watery vapour of the contiguous parts of it, if they fhould contain a fufficient quantity to admit of this effect. But events fimilar to thefe occur, when dew appears in an open and level grafs field, during a ftill and ferene night. The upper parts of the grafs radiate their heat into regions of empty fpace, which confequently fend back no heat in return; its lower parts, from the fmallnefs of their conducting power, tranfmit little of the earth's heat to the upper parts, which at the fame time receiving only a fmall quantity from the atmofphere, and none from any other lateral body, muft remain colder than the air, and condenfe into dew its watery vapour, if this be fufficiently abundant, in refpect to the decreafed temperature of the grafs.

"This fubject may be further illuftrated by a reference to what happens in the experiment, which has been ufed to prove the reflection of cold.

"In the fimpleft form of this experiment, a fmall body, the bulb of a thermometer, poffeffing the temperature of the atmofphere, is placed before a larger cold body, rendered equal in effect to one ftill larger, by means of a concave metallic mirror. In this fituation, the fmall body radiates heat to the larger, without receiving an equivalent from it, and, in confequence, becomes colder than the air through which its heat is fent, notwithftanding that it is continually gaining fome heat, both from the air which furrounds it, and from the walls and contents of the apartment, in which the experiment is made. Dew, therefore, would as readily form upon the thermometer in this experiment, as it would upon one fufpended in the open air at night, under a clear fky, provided that the two inftruments were equally colder than the atmofphere, and that this was in both cafes equally near to being replete with moifture.

"Regarding now as eftablifhed, that bodies fituated on or near to the furface of the earth become, under certain circumftances, colder than the neighbouring air, by radiating more heat to the heavens, than they receive in every way, I fhall in the firft place offer a few remarks on the extent and ufe of this occurrence, and fhall afterwards apply the knowledge of it to the explanation of feveral more of the appearances defcribed in the former part of this Effay, and of of fome others, which have not hitherto been mentioned by me.

" Radiation of heat by the earth to the heavens muft exift at all times ; but, if the fun be at fome height above the horizon, the degree of which is hitherto undetermined, and probably varies according to feafon, and feveral other circumftances, the heat emitted by it to the earth will overbalance, even in places fhaded from its direct beams, that which the earth radiates upwards.

" In a calm and ferene night, however, when confequently little impediment exifts to the efcape, by radiation, of the earth's heat to the heavens, and when no heat can be radiated by the fun to the place of obfervation, an immenfe degree of cold would occur on the ground, if the following circumftances did not combine to leffen it. 1. The incapacity of all bodies to prevent, entirely, the paffing of heat, by conduction, from the earth to fubftances placed upon them. 2. The heat radiated to thefe fubftances by lateral objects. 3. The heat communicated to the fame fubftances by the air. 4. The heat which is evolved, during the condenfation of the watery vapour of the atmofphere into dew.

" The extent of the effect of all thefe checks upon the production of cold, by the nightly radiation of heat from bodies on the furface of the earth, cannot, in the prefent ftate of our knowledge, be properly eftimated ; but facts fhew that, notwithftanding their operation, the cold originating in this fource muft be often very confiderable.

" I fhall add, with the greateft diffidence, a few words upon a final caufe of the radiation of heat from the earth at night, and upon fome of the circumftances which modify its action, though fully confcious of the danger of error, which is always incurred in the attempt to appreciate the works of our Creator.

" The heat which is radiated by the fun to the earth, if fuffered to accumulate, would quickly deftroy the prefent conftitution of our globe. This evil is prevented by the radiation of heat by the earth to the heavens, during the night, when it receives from them little or no heat in return. But, through the wife economy of means, which is witneffed in all the operations of Nature, the prevention of this evil is made the fource of great pofitive good. For the furface of the earth, having thus become colder than the neighbouring air, condenfes a part of the watery vapour of the atmofphere into dew, the utility of which is too manifeft to require my fpeaking of it. I may remark, however, that this fluid appears chiefly where it is moft wanted, on herbage, and low plants, avoiding, in great meafure, rocks, bare earth, and confiderable maffes of water. Its production too, by another wife arrangement, tends to prevent the injury, that might arife from its own caufe ; fince the precipitation of water, upon the tender parts of plants, muft leffen the cold in them, which occafions it. I fhall obferve in the laft place, that the appearance of dew is not confined to any one part of the night, but occurs during its whole courfe, from means the moft fimple and efficacious. For after one part of the air has depofited its moifture, on the colder furface of the earth, it is removed, in confequence of that agitation in the atmofphere which exifts during its ftilleft ftates, and gives place to another having its quantity of water undiminifhed ; and, again, as the night proceeds, a portion of air, which had before depofited all the moifture, which circumftances at that time permitted, is rendered fit, by the general increafe of the cold of the atmofphere, to give out a frefh parcel, when it comes anew into contact with the ground.

" The firft fact, which I fhall here attempt to explain, is the prevention, either wholly or in part, of cold, from radiation, in fubftances on the ground, by the interpofition of any folid body between them and the fky. This evidently appears to arife in the following manner. The lower body radiates its heat upwards, as if no other intervened between it and the fky ; but the lofs, which it hence fuffers, is more or lefs compenfated by what is radiated to it, from the body above, the under furface of which poffeffes always the fame, or very nearly the fame temperature as the air.

" No direct experiments can be made to afcertain the manner, in which clouds prevent, or occafion to be fmall, the appearance of a cold at night, upon the furface of the earth, greater than that of the atmofphere ; but it may, I think, be firmly concluded, from what has been faid in the preceding article, that they produce this effect, almoft entirely, by radiating heat to the earth, in return for that which they intercept in its progrefs from the earth towards the heavens. For although, upon the fky becoming fuddenly cloudy during a calm night, a naked thermometer, fufpended in the air, commonly rifes two or three degrees, little of this rife is to be attributed to the heat evolved by the condenfation of watery vapour in the atmofphere, as was fuppofed by Mr. Wilfon ; fince, in confequence of the ceafing of that part of the cold indicated by the thermometer, which was owing to its own radiation to a clear fky, the temperature of the atmofphere may feem to increafe 2°, or more, notwithftanding that it has received no real addition. Befides, the heat which is extricated by the condenfation of vapour, during the formation of a cloud, muft foon be diffipated ; whereas the effect of greatly leffening, or preventing altogether, the appearance of a fuperior cold on the earth to that of the air, will be produced by a cloudy fky, during the whole of a long night.

" Denfe clouds, near the earth, muft poffefs the fame heat as the lower atmofphere, and will therefore fend to the earth as much, or nearly as much, heat as they receive from it by radiation. But fimilarly denfe clouds, if very high, though they equally intercept the communication of the earth with the fky, yet being, from their elevated fituation, colder than the earth, will radiate to it lefs heat than they receive from it, and may, confequently, admit of bodies on its furface becoming feveral degrees colder than the air. In the firft part of this Effay, an example was given of a body on the ground becoming at night 5° colder than the air, though the whole fky was thickly covered with high clouds.

" Iflands, and parts of continents clofe to the fea, being, by their fituation, fubject to a cloudy fky, will, from the fmaller quantity of heat loft by them through radiation to the heavens at night, in addition to the reafons commonly affigned, be lefs cold in winter, than countries confiderably diftant from any ocean.

" Fogs, like clouds, will arreft heat, which is radiated upwards by the earth, and, if they be very denfe, and of confiderable perpendicular extent, may remit to it as much as they receive. Accordingly, Mr. Wilfon found no difference at night, in very foggy weather, between the temperature of the furface of fnow, and that of the air.

" In mifts and low fogs it was found by profeffor Leflie, that the diminution of the fun's heat is fmall, when compared with what occurs, when the fky is obfcured by a denfe body of clouds ; and it will, I prefume, be readily granted, that the fame ftate of the atmofphere, which allows the heat of the fun to pafs copioufly, will alfo give a ready tranfit to heat radiated by the earth."

From previous reafoning, the author concludes, therefore, that " fogs do not in any inftance furnifh a real exception to the

the general rule, that whatever exifts in the atmofphere, capable of ftopping or impeding the paffage of radiant heat, will prevent or leffen the appearance at night of a cold on the furface of the earth, greater than that of the neighbouring air.

" It follows alfo, from what has been faid in this article, that the water depofited upon the earth, during a fog at night, may fometimes be derived from two different fources, one of which is a precipitation of moifture from a confiderable part of the atmofphere, in confequence of its general cold; the other, a real formation of dew, from the condenfation, by means of the fuperficial cold of the ground, of the moifture of that portion of the air, which comes in contact with it. In fuch a ftate of things, all bodies will become moift, but thofe efpecially which moft readily attract dew in clear weather. I have had no opportunity, however, of trying this conclufion by the teft of obfervation, fince it occurred to me.

" When bodies become cold from radiation, the degree of effect obferved muft depend, not only on their radiating power, but in part alfo on the greater or lefs eafe, with which they can derive heat, by conduction, from warmer fubftances in contact with them. Thus grafs, on a clear and ftill night, was conftantly colder, fometimes very much colder, than the gravel-walk, though a fmall quantity of fand, placed upon grafs, was always nearly as cold as this fubftance. In this cafe, the difference in temperature between the gravel-walk and fand, evidently depended on the different quantities of heat which they received from the parts beneath. A like reafon is to be given for dew appearing in greater quantity on fhavings of wood, than on the fame fubftance in a more denfe and compact form; and for filamentous and downy fubftances becoming colder than all others, even than lamp-black, which is placed by Mr. Leflie, at the head of the beft folid radiators of heat. For the lamp-black expofed by me, being about two lines in depth, poffeffed, in confequence, a fund of internal heat, which would more readily pafs to its cold furface, than the heat of the lower parts of the downy fubftances would to their upper furface.

" Bodies, expofed in a clear night to the fky, muft radiate as much heat to it during the prevalence of wind, as they would do if the air were altogether ftill. But in the former cafe, little or no cold will be obferved upon them above that of the atmofphere, as the frequent application of warm air muft quickly return a heat equal, or nearly fo, to that which they had loft by radiation A flight agitation of the air is fufficient to produce fome effect of this kind; though, as has already been faid, fuch an agitation, when the air is very pregnant with moifture, will render greater the quantity of dew, one requifite for a confiderable production of this fluid being more increafed by it, than another is diminifhed."

Theophraftus remarks, and the remark has been confirmed by other writers, that " the hurtful effects of cold occur chiefly in hollow places. If this be reftricted to what happens on ferene and calm nights, and it does not, I believe, hold true in any other circumftances, two reafons from different fources are to be affigned for it. The firft is, that the air being ftiller in fuch a fituation, than in any other, the cold, from radiation, in the bodies which it contains, will be lefs diminifhed by renewed applications of warmer air; the fecond, that from the longer continuance of the fame air in contact with the ground, in depreffed places than in others, lefs dew will be depofited, and therefore lefs heat extricated during its formation. It will be feen in the laft part of this Effay, that, in the Eaft Indies, depreffions in the earth are artificially made, for the purpofe of increafing the cold, which appears in ferene nights. On this fubject, however, it is to be obferved, that if the depreffed or hollow places be deep, in proportion to their horizontal extent, a contrary effect muft follow; as a cafe will occur more or lefs fimilar to that which exifted in fome experiments formerly related by me, in which a fmall portion of grafs was furrounded by a hollow cylinder.

" An obfervation clofely connected with the preceding, namely, that in clear and ftill nights, frofts are lefs fevere upon hills, than in neighbouring plains, has excited more attention, chiefly from its contradicting what is commonly regarded an eftablifhed fact, that the cold of the atmofphere always increafes with the diftance from the earth. This inferior cold of hills is evidently a circumftance of the fame kind, with that afcertained by Mr. Pictet and Mr. Six, refpecting the increafing warmth, in clear and calm nights at all feafons of the year, of the different ftrata of the atmofphere, in proportion as thefe are more elevated above the earth. As the greater cold of the lower air is the lefs complicated fact, I fhall attempt to explain it in the firft place. Mr. Pictet, indeed, furnifhes an explanation himfelf, by afcribing it to the evaporation of moifture from the ground. But to fhew that this is not juft, it need only be mentioned, that the appearance never occurs in any confiderable degree, except upon fuch nights as are attended with fome dew, and that its great degrees are commonly attended with a copious formation of that fluid; fince it cannot be thought, that the fame ftratum of air will depofit moifture on the ground, from an infufficiency of heat, at the very time it is receiving moifture from the ground, in the ftate of pellucid vapour, as this prefuppofes, that it is not yet replete with water."

Ariftotle and Plutarch, and of late Mr. Jefferfon, (Notes on Virginia,) have obferved that dew is much lefs copious on hills than it is upon plains. In order to account for this fact, we may allow, at firft, that the furface of the ground is in both fituations equally colder than the air contiguous to it; yet, " as the production of dew muft be in proportion to the whole depreffion of the temperature of the air which furnifhes it, below what its heat had been in the preceding day, and as one part of this depreffion, the general cooling of the atmofphere, is much more confiderable on the plain than on the hill, moifture muft neceffarily be depofited more copioufly in the former than in the latter place. If the greater agitation of the atmofphere, and the lefs quantity of moifture, during clear weather, in its higher region than in the lower, be added, it may readily be inferred, that dew fhall fometimes be altogether wanting on a hill, though abundant on a plain at its foot, agreeably to what has been actually obferved by Mr. Jefferfon.

" The leaves of trees often remain dry throughout the night, while thofe of grafs are covered with dew. As this is a fimilar fact to the fmallnefs of dew on hills, I fhall in accounting for it do little more, than enumerate the circumftances on which it depends.

" 1. The atmofphere is feveral degrees warmer near the upper parts of trees on dewy nights, than clofe to the ground. 2. The air in the higher fituation is more agitated, than that in the lower. 3. The air at a little diftance from the ground, from being nearer to one of its fources of moifture, will on a calm evening contain more of it, than that which furrounds the leaves of elevated trees. 4. Only the leaves of the very tops of trees are fully expofed to the fky. 5. The declenfion of the leaves from an horizontal pofition will occafion the air, which has been cooled by them, to flide quickly away, and be fucceeded by warmer parcels.

6. The

6. The length of the branches of the trees, the tendernefs of their twigs, and the pliancy of the footftalks of their leaves, will caufe in the leaves an almoft perpetual motion, even in ftates of air that may be denominated calm. I have hence frequently heard, during the ftillnefs of night, a ruftling noife in the trees, which formed one of the boundaries of the ordinary place of my obfervations, while the air below feemed without motion.

"Nearly in the fame manner is to be explained, why fhrubs and bufhes alfo receive dew more readily than lofty trees.

"Bright metals, expofed to a clear fky in a calm night, will be lefs dewed on their upper furface than other folid bodies; fince of all bodies they will, in fuch a fituation, lofe the fmalleft quantity of heat by radiation to the heavens, at the fame time that they are capable of receiving, by conduction, at leaft as much heat as any others from the atmofphere, and more than any others from the warmer folid fubftances, which they happen to touch.

"If the expofed pieces of metal be not very fmall, another reafon will contribute fomewhat to their being later and lefs dewed than other folid fubftances. For, in confequence of their great conducting power, dew cannot form upon them, unlefs their whole mafs be fufficiently cold to condenfe the watery vapour of the atmofphere; while the fame fluid will appear on a bad conductor of heat, though the parts a very little beneath the furface are warmer than the air."

It appears from the difcoveries of profeffor Leflie, that the metals differ in their capacities of radiating heat; and hence will arife a difference among themfelves with regard to their attraction of dew. Gold, filver, copper, and tin, as we have already faid, refift the formation of dew more ftrongly, than other fubftances of the fame clafs; but thefe metals, according to Mr. Leflie, radiate heat the moft fparingly. On the other hand, lead, iron, and fteel, which, according to the fame author, radiate heat more copioufly than the former metals, were found by Dr. Wells to acquire dew more readily. The fame obfervations may probably be applicable to platina and zinc. In the article Dew, we have already taken fome notice of the opinion of thofe who maintain, that it rifes from the earth at night. The firft trace of this opinion, according to Dr. Wells, occurs in the Hift. Acad. Sci. for 1687. Gerften advanced it anew in 1733. It was embraced by Mufchenbroeck and Dufay; though the former foon admitted that dew fometimes falls. Mr. Webfter of New England has adopted the fame opinion. We refer thofe who wifh to fee the arguments for and againft this opinion fully ftated to Wells's Effay.

Agreeably to another opinion on the origin of dew, that which is found upon growing vegetables, is faid to be the condenfed vapour of the plants on which it appears. "But this feems," fays our author, "to be erroneous for feveral reafons. 1. Dew forms as copioufly upon dead as upon living vegetable fubftances. 2. The tranfpired humour of plants will be carried away by the air which paffes over them, when they are not fufficiently cold to condenfe the watery vapour contained in it; unlefs, which is almoft never the cafe if mift does not already exift, the general mafs of the atmofphere be incapable of receiving moifture in a pellucid form. Accordingly, on cloudy nights, when the air, confequently, can never be cooled more than a little below the point of repletion with moifture, by bodies in contact with it, dew is never obferved upon any plants, that are elevated a few feet above the ground. 3. If a plant has become, by radiating its heat to the heavens, fo cold, as to be enabled to bring the air in contact with it below the point of repletion with moifture, that which forms upon it, from its own tranfpiration, will not then, indeed, evaporate. But other moifture will, at the fame time, be communicated to it by the atmofphere; and when the difference in the copioufnefs of thefe two fources is confidered, it may, I think, be fafely concluded, that almoft the whole of the dew, which will afterwards form on the plant, muft be derived from the air; more efpecially when the coldnefs of a clear night, and the general inactivity of plants in the abfence of light, both leffening their tranfpiration, are taken into account.

"An experiment, however, has been appealed to in proof, that the dew of plants actually does originate from fluid tranfpired by them; that, namely, in which a plant, fhut up in an air-tight cafe, becomes covered with moifture. But this experiment, if attentively examined, will be found to have little weight. Firft, the inclofed plant being exempt from the cold, which its own radiation would have produced in its natural fituation, on a dewy night, will tranfpire a greater quantity of fluid, than a fimilar plant expofed at the fame time to the open air. Again, the fmall quantity of air, contained in the cafe, muft foon be replete with moifture, after which, the whole of what is further emitted by the plant will neceffarily affume the form of a fluid, whatever may be the condition of the external atmofphere; whereas, during even the cleareft night, only a part of the fmaller quantity of moifture, emitted by the expofed plant, will be condenfed on its furface. In the laft place, notwithftanding the circumftances which favour the appearance of moifture upon inclofed plants from their own tranfpiration, ftill the quantity obferved on them is faid to be, for I have made no experiment myfelf refpecting this matter, much lefs confiderable, than what is feen upon plants of the fame kind, expofed to the air for the fame time, during a calm and ferene night." For feveral appearances connected with dew, we are under a neceffity of referring to the third part of Dr. Wells's Effay.

DEWAN, or Duan, a term which has various fignifications in India. It denotes a place of affembly, a native minifter of the revenue department, and chief juftice of civil caufes within his jurifdiction, and receiver general of a province. The term is alfo ufed to defignate the principal revenue fervant under an European collector, and even of a Zemindar. By this title, the Eaft India company are receivers of the revenues of Bengal, under a grant from the Great Mogul. Accordingly Dewannu denotes the office or jurifdiction of a Dewan.

DEWEYSBURG, in *Geography*, a town of Caledonia county, in Vermont, having 200 inhabitants.

DEZPHOUL, a town of Perfia, in Kuziftan, or Chufiftan, 28 miles W. of Shufter, containing nearly as many inhabitants as that city, and fituated on the eaftern bank of the Abzal, on a beautiful and fpacious plain. Its only ornament is an elegant bridge of twenty-two arches, erected by command of Sapor, notorious for deftroying as well as famous for building cities. The bridge is 450 paces in length, 20 in breadth, and about 40 in height. The piers are made of large ftones, and the arches and upper parts of burnt brick.

DIAL-*Work of a Clock*, col. 2, l. 24, for *Plate* XXIII. *r. Plate* XVIII.

DIALLAGE. See Mineralogy, *Addenda*.

DIAMOND, col. 4, l. 43, add—With a fmall portion of oxygen, as fir Humphrey Davy has lately difcovered.

Diamond. See Diamond, and Mineralogy, *Addenda*.

DIANA, col. 3, l. 20 from the bottom, for 27 *r.* 30.

DIANELLA, in *Botany*, a poetical name, in honour of the fylvan goddefs Diana, to whom Commerfon its author thought fo beautiful an inhabitant of the woods peculiarly appropriate.

appropriate.—Lamarck Dict. v. 2. 276. Illustr. t. 250. Juss. 41. Brown Prodr. Nov. Holl. v. 1. 279. Ait. Hort. Kew. v. 2. 276.—Class and order, *Hexandria Monogynia.* Nat. Ord. *Coronariæ,* Linn. *Asparagi,* Juss. *Asphodeleæ,* Br.

Eff. Ch. Calyx none. Petals six, spreading. Filaments tumid at the top. Berry of three cells, with many seeds.

Perennial *herbs,* with fibrous *roots,* grassy sheathing *leaves,* and panicled, drooping, blue *flowers,* whose *anthers,* as well as the spongy top of each filament, are yellow. The *berries* are blue, with shining *seeds.*

Seven species are found in New Holland; three are enumerated in Hort. Kew. A few examples will suffice.

D. *ensifolia.* Sword-leaved Dianella. Redout. Lil. t. 1. Ait. n. 1. (D. nemorosa; Lamarck n. 1. Jacq. Hort. Schoenbr. v. 1. 49. t. 94. Dracæna ensifolia; Linn. Mant. 63. Willd. Sp. Pl. v. 2. 158.)—Leaves sword-shaped, smooth. Flowers loosely panicled.—Native of the East Indies. A frequent stove plant, about two or three feet high. *Leaves* an inch broad. *Flowers* green and white.

D. *cærulea.* Blue Dianella. Br. n. 1. Ait. n. 2. Curt. Mag. t. 505. Red. Lil. t. 79.—Leaves with rough edges and keel. Panicle scarcely subdivided. Flower-stalks aggregate.—Native of Port Jackson, from whence it was brought very early. *Leaves* about half an inch broad. *Flowers* deep blue.

D. *divaricata.* Spreading Dianella. Br. n. 6. Ait. n. 3.—Leaves radical, nearly linear, smooth. Panicle repeatedly compound, spreading; ultimate branches zigzag, racemose. Bracteas very minute.—Native of the south coast of New Holland. *Br.*

DIARBEKIR, insert—the ancient *Amida*; l. *ult.* after Rome, insert—It is said by M'Kinneir to contain 38,000 souls, most of whom are Turks. The elevation of the surrounding mountains, the windings of the Tigris, and height of the walls and towers, with the cupolas of the mosques, give it an air of grandeur superior to that of any other city, which this traveller has visited in this quarter of the world; l. *ult.* N. lat. 37° 55′ 30″. E. long. 39° 52′.

Diarbekir, l. 2, after Turkey, insert—and next to that of Erzeroom, the most considerable pachalic of Armenia; l. 21, after Curdistan, add—It is situated between the Tigris and Euphrates, and separated from the dependencies of Merdin by a small river and a branch of mount Masius. The whole of it is very mountainous and difficult of access; however it is interspersed with narrow and fertile valleys, and abounds with the most beautiful and romantic scenery:—l. *ult. r.* The principal town of this pachalic is *Diarbek*; which see.

DIASPASIS, in *Botany,* Brown Prodr. Nov. Holl. v. 1. 586, a genus intermediate between Scævola and Dampiera, (see those articles,) but perhaps most akin to the latter.

1. D. *filifolia,* from the south coast of New Holland, is the only species.

DIASPORE. See Mineralogy, *Addenda.*

DICKINSON, in *Geography,* l. 3, *r.* 1794.

DICKSON. Add—Also, a county of West Tennessee, containing 4516 inhabitants, of whom 990 are slaves.

DIDACTYLUS, a species of Bradypus; which see. See also Sloath.

DIGHTON, l. *ult. r.* 1659, &c.

DIGITUS. Add—See Extremities.

DIKE, Offa's. See Dyke.

DIMERIA, in *Botany,* from its double spike.—Brown Prodr. Nov. Holl. v. 1. 204.—A grass chiefly distinguished from Saccharum, (see that article,) by the *flowers* being all sessile, on a permanent, not jointed, *stalk.*

D. *acinaciformis* was found by sir J. Banks, in the tropical part of New Holland, and Mr. Brown has an East Indian species.

DINAS-MAWDDWY. In 1811, the hundred of Tallybont and Mawddwy contained 843 houses, and 4287 persons; 1964 being males, and 2323 females: 531 families employed in agriculture, and 200 in trade, &c.

DINGAS. Add—See Scind.

DINGWALL. In 1811, the burgh and parish contained 278 houses, and 1500 persons; 647 being males, and 853 females: 158 families employed in agriculture, and 153 in trade and manufactures.

DINWIDDIE, l. 4 and 5, *r.* 12,524 inhabitants, of whom 7442 are slaves.

DIOPSIDE. See Mineralogy, *Addenda.*

DIOTIS, in *Botany,* from the *two ears* of its calyx, when in fruit.—Schreb. Gen. 633. Willd. Sp. Pl. v. 4. 368. Ait. Hort. Kew. v. 5. 266. (Ceratoides; Tourn. Cor. 52.)—Class and order, *Monoecia Tetrandria.* Nat. Ord. *Holeraceæ,* Linn. *Atriplices,* Juss.

Eff. Ch. Male, Calyx four-leaved. Cor. none.

Female, Calyx of one leaf, with two horns. Style deeply cloven. Seed solitary, hairy at the base, concealed in the closed calyx.

1. D. *Ceratoides.* Shrubby Diotis. Willd. n. 1. Ait. n. 1. (Axyris Ceratoides; Linn. Sp. Pl. 1389. Jacq. Ic. Rar. t. 189.)—Native of Siberia. A weak shrub, with linear-lanceolate *leaves,* and crowded inconspicuous *flowers,* of no beauty.

DIPLACRUM, from διπλοος, *double,* and ακρος, *a point.*—Brown Prodr. Nov. Holl. v. 1. 240.—Class and order, *Monoecia Triandria.* Nat. Ord. *Calamariæ,* Linn. *Cyperoideæ,* Juss.

Eff. Ch. Male, Calyx a chaffy scale, lateral. Cor. none. Female, Calyx of two equal, ribbed, permanent, pointed valves. Stigmas three. Nut spherical, without scales at the base, concealed in the closed calyx.

1. D. *caricinum.* Br. n. 1.—Native of the tropical part of New Holland. *Banks.* A little grassy bog plant, with a leafy *stem,* and axillary as well as terminal tufts of *flowers.* Akin to Scleria and Carex; see those articles.

DIPLANTHERA, from its apparently double anthers.—Banks and Solander in Br. Prodr. Nov. Holl. v. 1. 448.—Class and order, *Didynamia Angiospermia.* Nat. Ord. akin to *Solaneæ* and *Scrophularinæ?* Br.

Eff. Ch. Calyx three-lobed; lateral lobes cloven. Corolla two-lipped; upper lip inversely heart-shaped, flat. Anthers of two divided, divaricated, linear lobes. Stigma two-lobed.

1. D. *tetraphylla.* Br. n. 1. Banks Ic. ined. in Bibl. Linn.—Native of the tropical part of New Holland. A *tree,* with an irregular spreading head, of round downy *branches. Leaves* four in a whorl, stalked, large, obovate, entire; cloven, and marked with two glands, at the base. *Flowers* numerous, large, and handsome, yellow, with long prominent *stamens* and *style,* in dense terminal panicles. Ripe *fruit* not known.

DIPLARRHENA, from having only two of the three stamens perfect.—Labill. Nov. Holl. v. 2. 117. Voy. Engl. ed. v. 1. 169. Brown Prodr. Nov. Holl. v. 1. 304.—Class and order, *Triandria Monogynia.* Nat. Ord. *Ensatæ,* Linn. *Irides,* Juss.

Eff. Ch. Sheath of two leaves. Three inner segments of the corolla smallest; upper one vaulted. Stamens distinct; two of them converging under the vaulted segment of the corolla; the third imperfect. Stigma two-lipped, in three deep segments. Seeds depressed.

1. D. *Moræa*. Labill. as above, t. 15. Br. n. 1. (Moræa diandra; Vahl Enum. v. 2. 154.)—Native of the south coast of New Holland, flowering in May. The flowers are very short-lived, white; their inner segments variegated. This plant differs from PATERSONIA, (see that article,) chiefly in the irregularity of its *flower*.

DIPLOPOGON, from διπλοος, *two-fold*, and πωγων, *a beard*.—Brown Prodr. Nov. Holl. v. 1. 176.—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eff. Ch. Calyx of two lax, membranous, awned valves, single-flowered. Corolla of two valves; outer with three awns, of which the middle one is twisted, unlike the rest; inner with two awns.

1. D. *setaceus*. Setaceous Diplopogon.—Gathered by Mr. Brown, on the southern coast of New Holland. A grass perfectly resembling AMPHIPOGON *laguroides*, (see that supplementary article,) in *habit* and *inflorescence*, the *spike* being capitate, and the outermost *flowers* likewise abortive, composing a kind of *involucrum*. *Brown*.

DIP-MICROMETER, and DIP-SECTOR, instruments invented by Dr. Wollaston, to correct the variation of the real dip from that given in the tables; arising principally from the difference between the temperature of the sea and that of the atmosphere.

DIPODIUM, in *Botany*, from δις and πους, alluding to the two separate stalks, or *feet*, by which the masses of pollen attach themselves to the stigma.—Brown Prodr. Nov. Holl. v. 1. 330.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx-leaves and petals uniform, spreading. Lip three-lobed; disk bearded; base with a short spur. Column semi-cylindrical. Anther a terminal deciduous lid. Masses of pollen solitary in each cell, with an inner lobe, each attached by a separate thread to the gland of the stigma.

Leafless smooth *herbs*, growing on the ground, with a thick, branching *root*. Base of the *stem* sheathed with imbricated scales, more distant on its upper part, where they become *bracteas*. *Flowers* numerous, in a simple cluster, purple, very handsome. Two species are mentioned.

1. D. *punctatum*. Dotted Dipodium. Br. n. 1. Dendrobium punctatum; Sm. Exot. Bot. v. 1. 21. t. 12.)—Lower scales broadly ovate, acute, without a keel; upper split longitudinally. See DENDROBIUM, n. 10.

2. D. *squamatum*. Scaly Dipodium. (Cymbidium squamatum; Swartz Orch. in Schrad. N. Journ. v. 1. 76. Ophrys? squamata; Forst. Prodr. 59.)—Lower scales oblong, keeled; upper undivided at the base. *Br.*—Native of New Caledonia. Very nearly related to the first.

DIPSACEÆ, l. 3, after *cotyledons*, insert—two.

DIPTEROCARPUS, διπτερος, *two-winged*, and καρπος, *fruit*.—"Gærtn. v. 3. 51. t. 188." Roxb. Corom. v. 3. 10.—Class and order, *Polyandria Monogynia*. Nat. Ord. *Guttiferis*, Juss. affine.

Eff. Ch. Calyx inferior, five-cleft; two segments subsequently much enlarged. Petals five. Capsule ovate, of one cell. Seed solitary.

1. D. *turbinatus*. Wood-oil Dipterocarpus. Roxb. as above, t. 213.—Native of various countries eastward of Bengal, flowering early in the hot season, and famous for its liquid balsam, much used for painting houses and ships. This is copiously procured by wounding the trunk, and lighting a fire near the part. The *tree* is very large. *Leaves* alternate, stalked, ovate, acute, wavy or serrated, smooth, from four to twelve inches long. *Flowers* in simple, axillary *clusters*, large, white, with yellow *anthers*. Wings of the *calyx* in fruit erect, oblong, three inches in length.

DISCHARGED WORK. See PASTE-*Work* and DISCHARGING *of Colour*.

DISS, l. 6, *r.* 348, and 2590.

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DISTHENE. See MINERALOGY, *Addenda*.

DISTILLATION, col. 7, l. 22, &c. for Wetter *r.* Welter.

DISTILLED WATERS, col. 2, l. 23 from bottom, for macerated water *r.* macerated in water.

DISTILLER, col. 2, l. 12 from bottom, *r.* 24 Geo. II. c. 40. Col. 3, l. 19, *r.* 14 Geo. III. c. 73. Col. 5, l. 24, *r.* 43 Geo. III. c. 81.

DIXFIELD, l. 2, for Cumberland *r.* Oxford. Add—it contains 403 inhabitants.

DIXMONT. Add—Also, a town of Maine, in the county of Hancock, having 337 inhabitants.

DIXVILLE, a township of Coos county, in New Hampshire, having 12 inhabitants.

DOAB, or DOOAB, denotes in India any tract of country included between two rivers.

DOCKING, in the *Manege*. See CURTAILING.

DODBROOKE, l. *ult. r.* 112, and 942.

DODECAGON. The demonstration annexed is misplaced, and belongs to DECAGON.

DOEMIA, in *Botany*, Brown Tr. of the Wern. Soc. v. 1. 50. (Daemia; Ait. Hort. Kew. v. 2. 76.) a genus of the *Asclepiadeæ*, differing from SARCOSTEMMA, (see that article,) in having the outer crown of the stamens in ten deep segments. It consists of *Cynanchum extensum*, Jacq. Ic. Rar. t. 54, (to which *C. bicolor*, Andr. Rep. t. 562. is very nearly related,) and *Asclepias cordata*, Forsk. Egypt.-Arab. 49.

DOLGELLY, col. 2, l. 21 and 22 from bottom, *r.* 537 and 3064.

DOLOMITE. See MINERALOGY, *Addenda*.

DONCASTER, col. 2, l. 26 from bottom, *r.* 1438 and 6935.

DONEGAL, in America, l. 1, *r.* four; l. 3, *r.* 3156 and 2147; l. 4, 1327. Add—And one in Butler county, having 671 inhabitants.

DONIA, in *Botany*, so named by Mr. Brown, in memory of the late Mr. George Don, of Forfar, a most acute and indefatigable Scottish botanist.—Br. in Ait. Hort. Kew. v. 5. 82. Pursh 559.—Class and order, *Syngenesia Polygamia-superflua*. Nat. Ord. *Compositæ*, Linn. *Corymbiferæ*, Juss.

Eff. Ch. Receptacle naked. Seed-down bristly, deciduous. Calyx imbricated, hemispherical.

1. D. *glutinosa*. Glutinous Donia. Ait. n. 1. (After glutinosus; Cavan. Ic. v. 2. 53. t. 168. Doronicum glutinosum; Willd. Sp. Pl. v. 5. 2115.)—Leaves ovate-oblong, sharply serrated, glutinous, as well as the upright-scaled calyx.—Native of Mexico. A green-house *shrub*, raised from Spanish seeds by Mr. Lambert, flowering in August and September. The *leaves* are sessile. *Flowers* terminal, solitary, near two inches broad, yellow, with many rays.

2. D. *squarrosa*. Snake-headed Donia. Pursh n. 1. Curt. Mag. t. 1706.—Leaves linear-oblong, serrated. Calyx glutinous, its scales with recurved cylindrical points.—Discovered by governor Lewis, in meadows on the banks of the Missouri, flowering in August and September. *Stem* herbaceous.

herbaceous. *Leaves* much narrower than the foregoing. *Flowers* yellow, with a balſamic ſcent.

DONNINGTON, l. 19, *r.* 1811; l. 20, *r.* 316; l. 21, *r.* 1528.

DOODIA, in *Botany*, named after Mr. Samuel Doody, F.R.S. one of the earlieſt and beſt Britiſh Cryptogamiſts. He was an apothecary in London, and died in 1706.—Brown Prodr. Nov. Holl. v. 1. 151. Ait. Hort. Kew. v. 5. 523.—We fear this genus cannot be ſeparated from WOODWARDIA; ſee that article.

DOOSHAK, in *Geography*, the preſent capital, and the reſidence of the prince of Seiſtan, in N. lat. 31° 8′. E. long. 63° 10′, eight or nine miles from the river Heermund. See ZARANG.

DORAK. See FELAHI.

DORCHESTER, col. 4, l. 29, *r.* 1811; l. 20, *r.* 3020 and 15,980.

DORCHESTER, in America, l. 10, *r.* 18,108 and 5032.

DORCHESTER townſhip, l. 2, *r.* 537; l. *ult.* *r.* 2930.

DORCHESTER, a town, or rather a village, formerly a city, of Oxfordſhire, between Benſon and Oxford. By the returns of 1811, the pariſh contained 148 houſes, and 754 perſons; 358 being males, and 396 females: 93 families employed in agriculture, and 47 in trade, manufactures, and handicraft.

DORKING, l. 29, *r.* 1811—589—3259.

DORSET, l. 4, *r.* 1294.

DORSETSHIRE, l. 15 and 16, *r.* 23,210 and 124,693.

DOVER, col. 9, l. 21, *r.* 9674 and 1780.

DOVER, in America, l. 3, *r.* 548; l. 11, *r.* 2228; l. 26, *r.* 1882; l. *ult.* *r.* 1882 inhabitants. Add—Alſo, a townſhip in the diſtrict of Ohio, in the county of Tuſcarawa, containing 461 inhabitants.

DOUGLAS, in America, l. 5, *r.* 1142; l. 11, *r.* 687. Add—Alſo, a townſhip of Bucks county, in Pennſylvania, having 660 inhabitants.

DOWNE. Add—containing 1501 inhabitants.

DOWNHAM, l. 25 and 26, *r.* 1811—361—1771.

DOWNTON, l. 24, *r.* 543—2624.

DRACOPHYLLUM, in *Botany*, ſo called from the reſemblance of its leaves to *Dracæna Draco*.—Labill. Voy. Engl. ed. v. 2. 219. t. 40. Br. Prodr. Nov. Holl. v. 1. 555.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eſſ. Ch. Calyx five-cleft. Corolla tubular; limb in five deep ſpreading ſegments, beardleſs. Nectary five ſcales beneath the germen. Receptacles of the ſeeds hanging looſe from the top of the central column. *Br.*

Some flowers are ſix-cleft, as Labillardiere obſerved in his *D. verticillatum*, found in New Caledonia. Mr. Brown, who met with four ſpecies in New Holland, remarks, that Forſter's *Epacris longifolia* and *roſmarinifolia*, Prodr. 13, natives of New Zealand, belong to this genus.

DRACUT, l. 2, after county, *r.* and ſtate of Maſſachuſetts; l. *ult.* *r.* 1301.

DRAG. See DROWNING.

DRAMATIC *Muſic of the Greeks*, col. 2, l. 5 from the cloſe, *r.* *maſks*.

DRAYTON. Add—The part of this pariſh that lies in Salop county contained, by the return in 1811, 599 houſes, and 3370 perſons; the other part, formerly denominated Tyrley, now Drayton-in-Hales, ſituated in the hundred of North Pirehill, in the county of Stafford, conſiſts of three townſhips, having 104 houſes, and 607 inhabitants.

DRESDEN, in America. Add—It contains 1096 inhabitants.

DRESSING, in *Rural Economy*, and the *Manege*, denotes the periodical application of friction, by means of bruſhes, cloths, &c. to the hides of animals, with a view both to cleanlineſs and health. (See CURRYING.) Friction on the ſurface of the body, by means of the curry-comb and bruſh, contributes to promote the circulation of the fluids, and that inſenſible perſpiration through the pores of the ſkin, which greatly conduce to the health and activity of the animal. Columella obſerves, that the bodies of cattle ought to be rubbed down daily, as well as the bodies of men; and frequently it does them more good to have their backs well rubbed down, than to have their bellies filled with large quantities of provender. Of the practice which is ſo common on the poſt-roads of throwing pailfuls of cold water on horſes when they are over-heated at the cloſe of a ſtage, Mr. Clark ſpeaks doubtfully; although it is ſaid that no bad conſequences enſue, probably becauſe they have little interruption of exerciſe; but he is of opinion, that if they are well rubbed down after exerciſe, there will be no occaſion for waſhing, or rather drenching them with cold water. See HORSE.

DRIFFIELD, l. 4, *r.* 399, and 1857.

DRIMIA, in *Botany*, from δριμυς, *acrid*, alluding to the qualities of the root.—Jacq. Coll. v. 5. 38. Willd. Sp. Pl. v. 2. 165. Ait. Hort. Kew. v. 2. 281.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Aſphodeli*, Juſſ.

Eſſ. Ch. Calyx none. Corolla inferior, bell-ſhaped, in ſix deep revolute ſegments. Stamens inſerted into the corolla. Stigma three-lobed. Capſule abrupt, ſomewhat triangular. Seeds few, oblong.

Five ſpecies, from Southern Africa, are deſcribed by Jacquin and Willdenow, and figured in Jacq. Ic. t. 373—377. They have ſcaly *bulbs*, linear-lanceolate *leaves*, coming after the tall, ſtalked *cluſter*, of numerous greeniſh *flowers*. *D. elata*, Curt. Mag. t. 822, and *D. puſilla*, Jacq. t. 374, are the only ones in Hort. Kew.

DROITWICH, l. *penult.* *r.* 423, and 2079.

DROMORE, l. 3, *r.* 1295.

DRONFIELD, l. 4, *r.* 267 and 1343.

DRYANDRA, in *Botany*, received its name from Mr. Brown, in honour of his friend Jonas Dryander, M.A. a diſtinguiſhed pupil of the great Linnæus, who ſucceeded the celebrated Solander in the place of librarian to ſir Joſeph Banks; and after rendering eminent ſervices to ſcience, died under the roof of his illuſtrious friend and patron, in October 1810, aged 62. Mr. Dryander has erected to himſelf a laſting monument in his *Catalogus Bibliothecæ Hiſtorico-naturalis Joſephi Banks*, the moſt elaborate and complete work of the kind, and the moſt perfect ſpecimen of correct execution, that perhaps any department of ſcience can boaſt. His papers on *Begonia*, *Lindſæa*, and other ſubjects, in the Tranſactions of the Linnæan Society, richly entitle him to botanical commemoration; to ſay nothing of his abilities as editor of the firſt edition, and part of the ſecond, of Mr. Aiton's *Hortus Kewenſis*, as well as of Dr. Roxburgh's Plants of Coromandel; or his various ſervices to natural ſcience in other reſpects. Thunberg had long ago publiſhed a DRYANDRA (ſee our former article); but that proving not diſtinct from Forſter's *Aleurites*, previouſly eſtabliſhed, Mr. Brown has happily choſen a moſt diſtinct genus, next akin to BANKSIA, and ſcarcely leſs rich in number and beauty of ſpecies.—Brown Tr. of Linn. Soc. v. 10. 211. t. 3. Prodr. Nov. Holl. v. 1. 396. Ait. Hort. Kew. v. 1. 219.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Common Calyx* hemiſpherical, of numerous, permanent, imbricated ſcales, many-flowered. *Cor.* of one petal,

petal, in four deep linear fegments, at length feparating more or lefs completely, flightly dilated and concave at their fummits. Nectary four fcales at the bafe of the germen. *Stam.* Filaments four, very fhort, inferted into the bafe of the cavity of each petal; anthers linear-oblong. *Pift.* Germen fuperior, very fmall, of two fingle-feeded cells; ftyle cylindrical, rigid, erect, about the length of the corolla; ftigma undivided. *Peric.* Follicle woody, obliquely turbinate, of two fhallow cells; the partition unconnected, deeply cloven tranfverfely, elaftic. *Seeds* folitary, compreffed, oblong, with a lateral crefcent-fhaped membranous wing. *Common Receptacle* flat, befet with oblong fcales or briftles, rarely wanting.

Eff. Ch. Corolla of one petal, four-cleft, bearing the ftamens in the hollows of its fegments. Nectary four fcales at the bafe of the germen. Follicle woody, of two fingle-feeded cells, with a cloven moveable partition. Common calyx imbricated, many-flowered. Receptacle flat.

This genus confifts of New Holland fhrubs, moftly of humble growth; their *branches*, if any, either fcattered or umbellate. *Leaves* fcattered, pinnatifid or cut, alike in young or old plants. *Flowers* folitary, feffile, terminal, rarely lateral, encompaffed with crowded *leaves*, of which the innermoft are fometimes diminifhed, or as it were imperfect, and accompanied at the bafe with clofe-preffed *bracteas*, fome of them occafionally furnifhed with a terminal appendage. *Style* for the moft part hardly longer than the corolla, and not forced into a curve as in *Bankfia*.

We follow Mr. Brown's names and numbers throughout.

1. D. *floribunda*. Many-flowered Dryandra. Ait. n. 1.—Leaves wedge-fhaped, deeply and fharply ferrated. Calyx-fcales ftriated; the outermoft nearly fmooth. Tips of the corolla fmooth. Stigma obtufe, flightly club-fhaped.—Native of Lewin's land, growing on ftony hills. Mr. Menzies favoured us with a fpecimen from King George's found. This fhrub flowers at Kew moft part of the year. The *branches* fometimes bear a few long, loofe, fpreading hairs. *Leaves* feffile, rigid, an inch and a half or two inches long, finely reticulated on both fides, the minute interftices of the veins curioufly depreffed beneath. *Flowers* terminal, in a clofe cylindrical head, refembling fome Thiftle or *Serratula*, fhorter than the crowded furrounding leaves. *Calyx* brown, of many fharp imbricated fcales, the inner ones gradually longeft, and hairy. *Corolla* thrice as long, yellow, externally hairy, except at the tips lodging the *ftamens*, which are fmooth, keeled, obtufe, minutely hooded. Mr. Brown obferves that the fcales of the *receptacle*, feparating the flowers, are fometimes wanting.

2. D. *cuneata*. Wedge-leaved Dryandra. Ait. n. 2.—Leaves wedge-fhaped, deeply ferrated, fpinous, ftalked. All the calyx-fcales even and filky. Tips of the corolla bearded. Stigma flender-awlfhaped, acute.—Found by Mr. Brown, on ftony hills in Lewin's land. He notices two varieties; one with *leaves* fcarcely an inch and a half long, whofe three terminal teeth are all nearly equal; another, which may poffibly be a diftinct fpecies, with *leaves* two inches long, whofe dilated extremity has the middle tooth fhorteft, the adjoining finufes broader.

3. D. *armata*. Acute-leaved Dryandra. Ait. n. 3.—Leaves pinnatifid; lobes triangular, flat, divaricated, ftraight, fpinous-pointed; reticulated with naked veins beneath: the terminal one longer than the next. Branches, and tips of the corolla, fmooth. Style downy at the bafe. Stigma awl-fhaped, furrowed.—Found by Mr. Brown, on rocky hills in Lewin's land. Mr. Good fent this fpecies to Kew in 1803, but it has not yet flowered there, nor have we feen a fpecimen.

4. D. *falcata*. Curve-leaved Dryandra. Br. n. 4.—Leaves pinnatifid; lobes triangular-awlfhaped, divaricated, falcate and recurved, fpinous-pointed; reticulated with naked veins beneath: the terminal one fhorter than the next. Branches downy. Tips of the corolla, as well as the ftyle, longitudinally fmooth. Stigma club-fhaped, without furrows.—Found by Mr. Brown, in the fame country as the laft.

5. D. *formofa*. Splendid Dryandra. Br. Tr. of Linn. Soc. v. 10. 213. t. 3. Ait. n. 4.—Leaves linear, elongated, deeply pinnatifid; lobes unequally triangular, pointlefs, flat; downy beneath. Calyx-fcales hairy; the innermoft linear-oblong, reflexed. Receptacle chaffy.—Difcovered by Mr. Menzies, near King George's found. Mr. Brown met with it likewife, in barren ground near the coaft of Lewin's land. This truly beautiful fpecies was fent to Kew, by Mr. Good, in 1803, and it is marked by Mr. Aiton as flowering there moft part of the year. The *leaves* are ftalked, from four to fix inches long, and barely one-third of an inch broad, cut to the mid-rib, into numerous, clofe, regular fegments, whofe upper margin is direct, lower curved; the under fide finely downy, fnow-white, turning rufty with age, or long keeping. *Stem* branched, downy. *Flowers* terminal, two or three inches in diameter, embofomed in leaves. *Calyx-fcales* purplifh-brown, ftriated and naked on the infide. *Flowers* of a tawny yellow, clothed with long fhining hairs to the very point. *Style* yellow, ftout and fmooth. *Stigma* cylindrical, furrowed. *Follicles* fmall; tapering and hairy at the bafe; rounded at the margin; gaping widely, overtopped by the linear fcales of the *receptacle*.

6. D. *mucronulata*. Pointed-lobed Dryandra. Br. n. 6.—Leaves linear, elongated, deeply pinnatifid; lobes equally triangular, pointed, flat; downy beneath. Calyx-fcales downy; inner ones linear, pointed. Receptacle chaffy. Stem fcarcely branched.—Gathered by Mr. Brown at Lewin's land, in low ftony ground.

7. D. *plumofa*. Feather-flowered Dryandra. Ait. n. 5.—Leaves linear, elongated, deeply pinnatifid; lobes equally triangular, pointed, flat; downy beneath; flightly revolute at the margin. Inner calyx-fcales with feathery tips. Receptacle without fcales.—Difcovered by Mr. Brown, on the rocky fides of hills, in Lewin's land. Sent to Kew by Mr. Good, in 1803, but has never bloffomed there.

8. D. *obtufa*. Obtufe-leaved Dryandra. Ait. n. 6.—Leaves linear, pinnatifid, longer than the downy recumbent ftem; lobes triangular, obtufe; downy beneath; thickened and recurved at the edges. Outer calyx-fcales ovate; inner linear-oblong.—Gathered by Mr. Brown in Lewin's land, in dry open fituations near the fhore. This alfo was fent to Kew, at the fame time as the laft, but has never yet produced flowers.

9. D. *nivea*. White-leaved Dryandra. Ait. n. 7.—(" Bankfia nivea; Labill. Voy. v. 1. 412." t. 24. Nov. Holl. v. 2. 118.)—Leaves linear, pinnatifid, about as long as the fmooth ftem; lobes unequally triangular, acute, pointed; white and mealy beneath; recurved at the margin. Calyx-fcales linear-lanceolate, fmooth, fringed. Corolla hairy from top to bottom, much fhorter than the ftyle.—Gathered by Mr. Menzies at King George's found; by Labillardiere and Brown in rocky places near the coaft of Lewin's land, flowering in December. The *ftem* is ufually from one to three inches high, greatly overtopped by the very long, narrow, erect *leaves*, which are not quite fo deeply pinnatifid as moft of the foregoing: each lobe has two or three prominent ribs beneath, and is clothed on that fide with a fnow-white mealy pubefcence, unaltered by time in our original fpecimen. *Flowers* folitary, feffile among the

leaves,

leaves, smaller than those of *D. formosa*, with a purplish-brown *calyx*, and yellow, or tawny *corolla*. *Style* purplish, angular, smooth. *Stigma* small, pyramidal, obtuse, not well represented in the plate; at least not in our English edition. This *flowers* at Kew from July to September. Mr. Brown notices a variety in which the lobes of the *leaves* are somewhat divaricated, single-ribbed, and the *stigma* hardly thicker than the *style*.

10. D. *longifolia*. Long-leaved Dryandra. Ait. n. 8. —Leaves linear, pinnatifid, very long, acute; downy beneath; tapering and entire at the base; lobes triangular, ascending, decurrent, recurved at the margin. Calyx-scales linear, awl-pointed, smooth, fringed. Corolla woolly at the base; downy upwards; rather hairy at the tips. Stem downy.—Discovered by Mr. Brown, on rocky hills in Lewin's land. The pubescence of the backs of the *leaves* is greyish, not white. This plant was raised at Kew in 1805, but has not yet borne any *flowers*.

11. D. *tenuifolia*. Slender-leaved Dryandra. Ait. n. 9. —Leaves linear, elongated, pinnatifid, rather abrupt; snow-white beneath; entire at the base, and tapering into a footstalk; lobes triangular, decurrent, divaricated, recurved at the margin. Calyx as long as the flowers, downy; outer scales ovato-lanceolate. Corolla almost as long as the style; woolly at the base; smooth upwards; slightly silky at the tips. Stem smooth.—Gathered by Mr. Brown, in heathy ground at Lewin's land. It flowers at Kew from March to May.

12. D. *pteridifolia*. Brake-leaved Dryandra. Br. n. 12. —Leaves deeply pinnatifid, longer than the downy stem; lobes linear, acute, pointed, revolute, dilated at their base. Calyx-scales downy, ovate.—Gathered by Mr. Brown, in Lewin's land, on the stony sides of hills.

13. D. *blechnifolia*. Blechnum-leaved Dryandra. Br. n. 13. —Leaves deeply pinnatifid, longer than the downy stem; lobes linear, obtuse, slightly pointed, three-ribbed, somewhat revolute, scarcely dilated at the base.—Gathered near King George's sound by Mr. Menzies, to whom we are obliged for a specimen, without flowers, with which Mr. Brown likewise was unacquainted; but the resemblance of the plant to the last-described, induced him to consider it as belonging to the present genus. The short *stem* is clothed with dense, soft, rusty pubescence. *Leaves* resembling a *Cycas* in texture, as well as form, though only a foot high; the early ones smaller, with very broad rounded lobes, clothed beneath with white woolly down; the pubescence of the more full-grown *leaf* only, in our specimen, is become rusty.

DRYMOPHILA, from δρυμον, *a grove*, and φιλεω, *to love*, alluding to its place of growth.—Br. Prodr. Nov. Holl. v. 1. 292.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Smilaceæ*, Br.

Eff. Ch. Calyx none. Petals six, equal, spreading, deciduous. Stamens inserted into the receptacle. Style deeply three-cleft, revolute. Berry of three cells, with many seeds.

1. D. *cyanocarpa*. Blue-berried Drymophila.—Found by Mr. Brown, in Van Diemen's island. *Root* perennial, creeping. *Stem* erect, mostly simple. *Leaves* twisted. *Flowers* white, stalked, solitary, axillary or terminal. *Br.*

DUBASH, a name applied at Madras to the same person who is denominated Banian in Bengal: it signifies a person who can speak two languages.

DUBLIN, in America, l. 4, *r.* 1184; l. 8, *r.* 2194; l. 10, *r.* 970. Add—Also, a township of Bedford county, in Pennsylvania, having 820 inhabitants.

DUBOISIA, in *Botany*, in memory of Mr. Dubois, a botanist of the time of Dillenius, who appears, by Ray's *Synopsis*, ed. 3. 17, to have had a garden at Mitcham in Surrey, and whose son, or brother, Charles, was an assiduous cryptogamist. His copy of Buxbaum is in our hands. —Br. Prodr. Nov. Holl. v. 1. 448.—Class and order, *Didynamia Angiospermia*. Nat. Ord. *Luridæ*, Linn. *Solaneæ*, Brown.

Eff. Ch. Calyx two-lipped, short. Corolla bell-shaped; limb in five deep, nearly equal, segments. Stamens in the tube, with the rudiment of a fifth. Stigma capitate, notched. Berry of two cells, with many kidney-shaped seeds.

1. D. *myoporoides*. Br.—Native of Port Jackson. A smooth *shrub*, with alternate undivided *leaves*, and white, panicled, axillary *flowers*, producing little black *berries*.

DUBUDU. See Dubdu.

DUCHESNEA, in *Botany*, a genus announced at the end of our article Fragaria, and since published in Tr. of Linn. Soc. v. 10. 371. It was supposed to differ essentially from *Fragaria* and *Potentilla*, (with both which the *calyx* agrees, and with the latter more particularly the *habit*,) in having the compound *berry* of a *Rubus*. Some garden specimens have led us to suspect an error in botanists who have described the ripe *fruit*, which in those specimens was certainly that of *Fragaria*, a succulent *receptacle* studded with dry *seeds*. Whether the latter becomes pulpy at any more advanced period, remains to be proved. Meanwhile this plant stands as *F. indica*, in Ait. Hort. Kew. v. 3. 273.

DUCK Creek, in *Geography*, a hundred of Kent county, in Delaware, containing 3690 inhabitants, of whom 167 are slaves.

DUDLEY, l. 3, *r.* 2621 houses, and 13,925 inhabitants. Add—Dudley is partly in Offlow hundred, Staffordshire, in which Dudley is locally situated.

Dudley, in America, l. 2, *r.* 1220.

DUEL. At the close, add—Duelling, says a late excellent writer, in the modern sense of the word, exclusive of casual frays and single combats during war, was unknown before the 16th century. But we find one anecdote, which seems to illustrate its derivation from the judicial combat. The dukes of Lancaster and Brunswick, having some differences, agreed to decide them by duel before John, king of France. The lists were prepared with the solemnity of a real trial by battle; but the king interfered to prevent the engagement. The barbarous practice of wearing swords as a part of domestic dress, which tended very much to the frequency of duelling, was not introduced till the latter part of the 15th century. Our author says, that he can find only one print in Montfaucon's Monuments of the French Monarchy where a sword is worn without armour before the reign of Charles VIII.; though a few as early as the reign of Charles VI. have short daggers in their girdles. Hallam's State of Europe during the Middle Ages, vol. ii. ch. 9. part i. p. 441. London, 1818.

DUEREN. See Deuren.

DUFOUREA, in *Botany*, so named in honour of a French botanist.—Achar. Syn. 246. "Lichenogr. 103. t. 11. f. 2." A genus of the order of *Lichenes*, composed of *L. flammeus*, Linn. Suppl. 451. Hoffm. Pl. Lich. t. 3. f. 1; *L. madreporiformis*, Wulf. in Jacq. Coll. v. 3. t. 3. f. 2; and three other species. The *frond* is tubular, branched, membranous; *shields* terminal, with a border from the frond. We must shelter ourselves under the doubt, expressed by the author himself, respecting this genus.

DUKE's County, l. 5, *r.* 3290.

DULVERTON, l. 11, *r.* 204 and 1035.

DULWICH. Add—See Camberwell and Peckham.

DUMBARTON. By the return of 1811, the burgh and parifh of Dumbarton contained 363 houfes, and 3121 perfons; 1373 being males, and 1748 females: 93 families employed in agriculture, and 524 in trade and manufactures. The fhire of Dumbarton contained 3218 houfes, and 24,189 perfons; 11,369 being males, and 12,820 females: 1123 families employed in agriculture, and 2689 in trade, manufactures, and handicraft.

DUMBLANE. In 1811, the parifh contained 473 houfes, and 2733 perfons; 1272 being males, and 1461 females: 163 families employed in agriculture, and 293 in trade, &c.

DUMFRIES. In 1811, the burgh and parifh contained 1445 houfes, and 9262 perfons; 4103 being males, and 5159 females.

DUMFRIESHIRE. By the return of 1811, this county contained 11,660 houfes, and 62,960 perfons; 29,347 being males, and 33,613 females: 3862 families employed in agriculture, and 4435 in trade, manufactures, and handicraft.

DUMMER, l. 2, for Grafton *r.* Coos; add—containing 7 inhabitants.

DUMMERSTOWN, l. 3, *r.* 1704.

DUNBAR, in Scotland. The burgh and parifh, in 1811, contained 664 houfes, and 3965 perfons; 1661 being males, and 2304 females: 263 families employed in agriculture, and 305 in trade and manufactures.

Dunbar, a townfhip of Fayette county, in Pennfylvania, containing 2066 perfons, of whom, in 1810, 7 were flaves.

DUNBARTON, l. 3, *r.* 1256.

DUNDEE, col. 2, l. 7 from the bottom, *r.* 1811—29,614, and add—the number of houfes 2482.

DUNFERMLINE, col. 2, l. 41, *r.* 1811—11,649; add—and the number of houfes in the burgh and parifh 1810.

DUNKARD, a townfhip of Greene county, in Pennfylvania, having 1055 inhabitants.

DUNKELD. The town and parifh, in 1811, contained 126 houfes, and 1360 perfons; 651 being males, and 709 females. The parifh of Little Dunkeld contained 637 houfes, and 2982 perfons; 1448 being males, and 1534 females.

DUNMOW, Great, col. 2, l. 14 and 15, *r.* 1811—397—2015.——*Little*, l. 4, add—The number of houfes, n 1811, was 45, and of perfons 264.

DUNNET. In 1811, the parifh contained 311 houfes, and 1398 perfons; 638 being males, and 760 females.

DUNSE. In 1811, the parifh contained 462 houfes, and 2424 perfons; 1174 being males, and 1250 females.

DUNSTABLE, l. 6, *r.* 1049; l. 9, *r.* 475.

DUNSTAPLE. In 1811, the parifh contained 296 houfes, and 1616 perfons; 690 being males, and 926 females.

DUODENUM. See Intestines.

DUPLIN, l. 4, *r.* 7863—2416.

DURAND, a townfhip of Coos county, in New Hampfhire, having 62 inhabitants.

DURBAR, denotes in India the court, hall of audience, or levee.

DURHAM, col. 2, l. 9, *r.* 29,033—177,625; l. 10, *r.* 83,671 and 93,954.

Durham *City*, l. *ult.* *r.* 932, and 6763.

Durham, in America, l. 4, *r.* 1772; l. 9, *r.* 1449; l. 11, for New Haven *r.* Middlefex; l. 15, *r.* 1101; l. 17, *r.* 404.

DURSLEY, l. 15, for town *r.* parifh, 489; l. 16, *r.* 2580—365 families.

DUTCHESS County, l. 7, *r.* in 1810, was 51,363—1262.

DUXBOROUGH, or Duxbury, l. 5, *r.* 2201.

DUXBURY, l. 3, *r.* 326.

DYBERRY, a townfhip of Wayne county, in Pennfylvania, having 318 inhabitants.

DYSART, l. 15, infert—The borough and parifh, by the return of 1811, contained 777 houfes, and 5506 perfons. The town of Dyfart contained 136 houfes, and 1578 perfons: the lower, &c.

DYSPHANIA, in *Botany*, δυσφανης, *inconfpicuous.*—Br. Prodr. Nov. Holl. v. 1. 411.—Clafs and order, *Polygamia Monoecia*, or rather *Diandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Chenopodiis affine*, Br.

Eff. Ch. Calyx deeply three-cleft, coloured. Cor. none. Stigma fimple. Capfule turbinate, attached to the feed, and encompaffed with the enlarged calyx. Moft flowers female.

1. D. *littoralis*. A tropical New Holland herb, fmooth, very diminutive, with alternate entire *leaves*, and axillary tufts of white *flowers*, twenty of which would hardly make the bulk of a pin's head. One only in each tuft is furnifhed with *ftamens*.

E.

EAGLE, in *Geography*, a townfhip of Adams' county, in Ohio, containing 801 inhabitants.—Alfo, a townfhip of St. Clair, in the Illinois territory, having 384 inhabitants.

Eagle, *Bald*, a townfhip of Centre county, in Pennfylvania, having 1146 inhabitants.—Alfo, a townfhip of Lycoming county, in the fame ftate, having 246 inhabitants.

Eagle *Ifland*. Add—Alfo, an ifland in the diftrict of Maine, and county of Hancock, having 9 inhabitants.

EAR, *Difeafes of*. See Deafness, Tympanum, Tube, *Euftachian*, and Otalgia, the latter of which articles will be found in the *Addenda*.

EARL, in *Geography*, a townfhip of Lancafter county, in Pennfylvania, containing 4218 inhabitants.—Alfo, a township of Berks county, in the same state, having 794 inhabitants.

EARTH, col. 19, l. 12 from bottom, for 7935 *r.* $3967\frac{1}{2}$, and for 7882 *r.* 3941.

EARTHEN WARE. See DELF and POTTERY.

EASTBOURNE, l. 13, after parish, insert—which contains 120 houses, and 720 inhabitants.

EAST DISTRICT, a township of Berks county, in Pennsylvania, having 805 inhabitants.

EASTHAM, l. 9, *r.* 752.

EASTON, col. 2, l. 1, *r.* 1657.

EASTON, l. 5, *r.* 1557.

EAST PORT. Add—It contained, in 1810, 1511 inhabitants.

EAST TOWN, l. 2, *r.* 587.

EAST WHITELAND, l. 2, *r.* 779.

EATON, l. *penult.* *r.* 535.

EATONTOWN, a town of Putnam county, in Georgia, having 73 inhabitants.

ECHENEIS, l. 4, add—Or, according to Dr. Shaw, head furnished above with a flat, ovate, transversely falcated shield, gill-membrane six-rayed, and body without scales.

ECLIPTIC, *Obliquity of*, col. 2, l. 6 from bottom, add—And he found the obliquity of the ecliptic at the summer solstice to be 23° 27′ 51″,5, and at the winter solstice 23° 27′ 47″,37. The difference he conceives to depend upon refraction. At the observation of the summer solstice in 1812 with the new mural circle, he found the obliquity of the ecliptic to be 23° 27′ 52″,25; from that of the winter solstice he deduced it 23° 27′ 47″,35.

ECTROSIA, in *Botany*, from εκτρωσις, *an abortion*, alluding to the number of abortive florets.—Brown Prodr. Nov. Holl. v. 1. 185.—A genus of grasses, allied to ELEUSINE, (see that article,) and to *Chloris* of Swartz, all whose characters require investigation.

EDDINGTON, in *Geography*, a town of America, in Maine and county of Hancock, having 205 inhabitants.

EDDYSTONE, col. 2, l. 1, for 8vo. *r.* folio.

EDEN, in America, l. 4, add—containing 657 inhabitants; l. 5, add—containing 224 inhabitants.

EDESSA. Add—Edessa, at present denominated Orfa, after having been the residence of the Courtneys, counts of Edessa, and having been taken by Zenghi or Zingi, was sacked by the Moguls in the 13th century, and by Timur in the 804th year of the Hegira. It is now subject to the grand seignior, and the residence of a pacha of two tails. It is situated in a barren country, 67 miles from Bir, and 232 from Diarbekr. It is surrounded by a stone wall, and defended by a citadel. The houses are well built, and the inhabitants, composed of Turks, Arabs, Armenians, Jews, and Nestorians, are said to amount to about 20,000 souls. The chief ornaments of this city are, a mosque, consecrated to Abraham, and the cathedral of the Armenians, now decayed.

EDGARTON, l. 7, *r.* 1365.

EDGCOMB, l. 3, *r.* 1288; l. 9, *r.* 12,423 and 5107.

EDGEFIELD. Add—It contains 23,160 inhabitants, of whom 8576 are slaves.

EDGEMONT, l. 2, *r.* 611.

EDINBURGH, col. 7, l. 7, add—By the parliamentary return of 1811, the city and burgh of Edinburgh contained 7110 houses, and 102,987 inhabitants; 43,982 being males, and 59,005 females. The shire of Edinburgh contained 8679 houses, and 45,620 inhabitants; 21,022 being males, and 24,598 females.

EDINGTON. In 1811 the parish contained 85 houses, and 417 persons; 195 being males, and 222 females.

EDISTO, *r.* PONPON.

EDWARDSIA, in *Botany*, (see that article,) is thus defined by Mr. Brown, in Ait. Hort. Kew. v. 3. 1.—Calyx five-toothed. Corolla papilionaceous. Legume with four wings and many seeds.

EFFINGHAM, l. 4, *r.* 876. Do. l. 5, *r.* 1004; *dele* including 762 slaves.

EGERIA, or EGERA, the most strongly fortified city of Mingrelia, on the left bank of the Enguri; populous and well built, and giving name to the whole country about it.

EGGS *of Flies*, l. 6 from the end, for formed *r.* found.

EGG, in *Architecture*, l. 4, for plated *r.* placed.

EGG *Harbour*. Add—It contains 1830 inhabitants, 22 being slaves.—Also, a town of Burlington county, in New Jersey, containing 931 inhabitants.

EGHAM, l. 4, insert—In 1811, the parish contained 519 houses, and 2823 inhabitants.

EGREMONT, l. 3, *r.* 790.

EGREMONT, l. 6, *r.* 1811; l. 7, *r.* 329, 1556.

EGYPT, col. 6, l. *ult.* for or *r.* an. Col. 7, l. *penult.* for this *r.* the.

ELAÏN, in *Chemistry*, a name given by Chevreul to a principle existing in animal tallows or fats. To obtain it, he dissolved the tallow in alcohol, and suffered the *steärin* (see STEÄRIN) to crystallize; the alcohol was then distilled off, and thus the elaïn separated. Braconnot procured it in a different manner. He submitted the tallow to pressure between folds of blotting-paper, which absorbed the elaïn. The paper was then soaked in water, and again subjected to pressure, by which the elaïn was forced out, and could thus be obtained separately.

Elaïn thus obtained has much the appearance of a vegetable oil, and is quite liquid at a temperature of 59°. Sometimes it is destitute of smell and colour, but most commonly it possesses both, owing probably to the presence of foreign bodies, from which it is impossible to free it. Chevreul examined the elaïn from the tallow of the human subject, the sheep, the ox, the hog, the jaguar, and the goose, all of which differed slightly from one another. Their specific gravity varied from .913 to .929; those of the human subject and ox being lightest, and that of the goose the heaviest. Those of the sheep, ox, and hog, were nearly colourless, and destitute of smell; all the others were more or less of a yellow colour, and possessed more or less odour. The elaïn of the sheep was most soluble in alcohol, 100 parts of which fluid, specific gravity .7952, dissolved 81.17 of elaïn at a temperature of 167°. The elaïn of the jaguar was least soluble, only 80.89 parts of the elaïn being soluble in the same quantity of alcohol at the same temperature. See further on this subject under STEÄRIN.

ELAOLITE. See MINERALOGY, *Addenda*.

ELBERT, l. 6, *r.* 4291 and 45.

ELBERTON, l. 3, add—it contains 58 inhabitants.

ELBURZ, a range of mountains in Khorassan in Persia, which detaches several branches that expand over the country between Asterabad and Meshed, also over a great way to the east and north of that city, form a junction with the ridge of Banian, and finally sink into the desert plains of Khorazan.

ELECTRICAL WELL, *dele*.

ELECTRICITY, *Medical*. (See MEDICAL *Electricity*.) This subject was terminated rather abruptly in the article above referred to, we shall therefore endeavour to supply what was there omitted, or has since been observed upon the subject.

The powers of electricity in removing diseases were much over-rated by the earlier electricians, as for the most part

part happens with all new remedies. The disappointment to which this necessarily led soon brought it into disrepute, and latterly it has been treated with unmerited neglect. There can be no doubt, however, that when judiciously applied, it is a remedy possessing very considerable powers.

It is not our intention to detail here all the diseases to which electricity and galvanism are applicable, as the remedy, when proper, will be found, for the most part, to be recommended in the different articles treating professedly of such diseases. Our object is merely to describe the best and most approved methods of applying electricity, and to state a few remarkable facts which have been lately observed respecting its use.

Electricity may be applied in the form of *shocks*, *sparks*, or of a *continued stream* or *current*. The first of these forms was generally had recourse to by the older electricians, but it has been long since laid aside, except in particular cases of great general, or local debility. In such cases, the *shock* must be proportioned to the degree of the disease, but the size of the jar employed seldom or never ought to exceed a quart. The second form, or that of *sparks* from the chief conductor, is an excellent mode of applying electricity in many instances. It is, however, much less used than formerly. Sparks may be applied by the medium of balls of brass or other metal, and their strength is determined by the magnitude of the prime conductor, of the balls, and of the machine in general, and by the distance at which the balls are removed from the patient's body. The nearer the balls, the less powerful and more frequent are the sparks, and *vice versâ*. The third method of applying electricity is in the form of a *continued stream* or *current*, and this perhaps is the most generally useful and important form of the whole. This method requires a very powerful apparatus. The current is directed through the different parts of the body by means of a simple apparatus placed in contact, or nearly so, with the body, and connected with the prime conductor. Besides these three forms of administering electricity, there is a fourth, which may be considered as intermediate in its nature between the two last; this is the application of what is termed the *electrical aura*. It is effected nearly like the last, only the electric fluid is permitted to pass off from *points* of metal or wood placed at some distance from the body, or sometimes instead of *points*, the *edges* of hollow metallic or wooden cylinders, more or less sharp, are employed in a similar manner.

Of these different methods of applying electricity, the two last are undoubtedly in all ordinary cases preferable to the others. They are equally, if not more, beneficial in most instances, if properly applied; and besides have the great advantage of exciting no dread or alarm in the patient, a circumstance which often operates powerfully in deterring timid individuals from having recourse to this remedy, besides being productive of actual injury. These methods, however, as we before observed, require a powerful apparatus, so that the electrician may be enabled to send a very copious stream of the fluid through the whole or any part of the body, if required, as it is chiefly upon this circumstance that the good effects of these modes of applying electricity depend. We would not, however, be understood to recommend these modes of applying electricity exclusively of all others. The application of shocks, and particularly sparks, is often of great use when judiciously employed. Even the alarm they excite may not be without its use in particular cases; but such cases are rare, and the application of the remedy with advantage in these forms requires great judgment and practical knowledge on the part of the medical electrician.

For the phenomena of that modification of electricity termed *galvanism*, and its general effects upon the animal economy, we refer our readers to Voltaism, where they will find these subjects discussed; we shall therefore chiefly confine our attention here to the exhibition of galvanism as a remedy. The general principles of the application of galvanism differ in no respect from those of the application of electricity, nor do the effects of this form of electricity upon the animal economy differ perhaps in any respect whatever from those produced by common electricity; from the mode, however, in which this variety of the electric energy is excited and brought into action, a little difference in the mode of applying it is necessary. The application of galvanism in the form of shocks and sparks is out of the question. It is always applied in the form of a *continued* or *interrupted stream*, or sometimes in the form of *aura*; hence the conductors generally require to be in contact with the skin of the patient, which should be kept moist. The greater the surface of the conductor in contact with the skin within certain limits, *cæteris paribus*, the greater the effect produced, and *vice versâ*. The *interrupted stream*, or that produced by the frequent removal and re-application of the conductor in contact with the skin, or by otherwise breaking the chain of communication, approaches in its nature more to that of the *electric shock* than the continued stream, a circumstance which should be kept in mind by the operator. Indeed with an apparatus composed of small plates, the stream requires to be occasionally interrupted, otherwise the effects will be very much diminished. See Voltaism, last section.

With respect to the magnitude of the battery proper for medical purposes, no very general rule can be given. The greater the number of plates, especially when of small size, the more do the effects produced upon the animal economy resemble those produced by common electricity. Large plates are best adapted for keeping up the *continued stream*, which is doubtless one of the best modes of exhibiting galvanism, and of ensuring its specific operation, if it exerts any. A medical galvanist can seldom require a battery composed of more than fifty or sixty pairs of plates, from four to six inches square, and a greater or less proportion of these must be employed according to the energy of action in the battery, and the circumstances of his patient. Dr. Wilson Philip states, that few patients can bear, for any length of time, more than from eight to sixteen pairs of plates fourteen inches square, when administered as described below. The same author, however, remarks, that patients can often bear double this number, for a short time, before any disagreeable sensation is produced.

Dr. Wilson Philip has lately attempted to shew that the galvanic battery may be substituted for the nervous energy in animals. His experiments on this subject are extremely interesting, and their results led him to employ galvanism as a remedy in several diseases to which it was never previously applied. These therefore remain to be briefly noticed.

Asthma and Dyspnæa.—Dr. Philip states, that he has employed galvanism in many cases of habitual asthma, and almost uniformly with relief. The good effects began to appear usually from five to fifteen minutes after the application of the remedy. His battery consisted of thirty plates fourteen inches square, more or less of which were employed according to the degree of sensation produced; and his rule was to begin with a low power, and gradually increase it by moving one of the wires from one division of the trough to another. His method of exhibiting it in this disease was to apply two thin plates of metal, about two or three inches in diameter, moistened with water, one to the nape of the neck, and the other to the pit of the stomach,

mach, or a little lower, which plates were connected with the wires leading to the oppoſite ends of the battery. He directs that the wires ſhould be conſtantly moved upon the metallic plates, particularly the negative wire, otherwiſe the cuticle is apt to be injured where they reſt. The relief ſeemed much the ſame whether the poſitive wire was applied to the nape of the neck, or the pit of the ſtomach. The different effects, therefore, aſcribed by ſome to poſitive and negative electricity ſeem doubtful. When relief was obtained, nothing appeared to be gained by continuing the operation longer. The galvaniſm was ſeldom uſed more than once a day, except in ſome ſevere caſes. About a ſixth part of thoſe on whom it was tried received a permanent cure. It gave decided relief in all caſes, and only failed to give *conſiderable* relief in about one-tenth of the whole number of caſes.

Similar good effects are ſtated by Dr. Philip to have been experienced in dyſpnœa, provided no inflammatory ſymptoms were preſent. Dr. Philip, however, ſeems to doubt if it will be found uſeful in ſpaſmodic aſthma.

In *Dyſpepſia*, likewiſe, Dr. Philip thinks it will prove an excellent remedy; alſo in torpor of the liver and biliary ducts; and a recent writer ſtates, that he has found it very advantageous in chronic *hepatitis*, *conſtipation*, &c. See an Experimental Enquiry into the Laws of the Vital Functions, by Dr. A. P. Wilſon Philip.

ELECTROPHORUS, col. 2, l. 19 from bottom, for hair-ſkin *r.* hare-ſkin.

ELEGANGE, col. 2, l. 4 from bottom, for are *r.* have.

ELEGY, l. 2 from bottom, *r.* Gray's.

ELEMENTS, in *Phyſics*, col. 2, l. 27, for *mercury* r. *earth.*

ELEOCHARIS, in *Botany*, ἕλος, *a marſh*, and χάρις, *an ornament* or *favour*, from its general place of growth.—Brown Prodr. Nov. Holl. v. 1. 224.—A genus ſeparated from SCIRPUS by Mr. Brown; near akin to DICHROMENA, in character, but very different in habit; ſee thoſe articles. Though the definition is not without exceptions, the genus is thought a natural one by its learned author, embracing *Scirpus paluſtris*, *geniculatus*, *mutatus*, and *acicularis* of Linnæus with ſeveral others. There are eight New Holland ſpecies.

ELEPHAS, col. 10, l. 21 from bottom, for thirteen *r.* three.

ELETTARIA, in *Botany*, ſo called by Dr. Maton, V.P.L.S., from the Malabar name *Elettari*, or *Ela-tari*, which has always been appropriated to this very plant. If any names of barbarous origin may be retained, and many are now eſtabliſhed, even by Linnæus himſelf, who in the vigour of his judgment and authority proteſted againſt them, the above may well be admitted, for the following reaſons. It excluſively belongs to a very important plant, conſtituting, as far as we know, a genus by itſelf, and it is perfectly unexceptionable in ſound and conſtruction, as well as free from all ambiguity. Were this name nevertheleſs to be finally rejected, we ſhould gladly ſubſtitute in its ſtead that of *Matonia*, in honour of our learned and valued friend, who has firſt clearly eſtabliſhed the genus.—Maton Tr. of Linn. Soc. v. 10. 254. Rheede Hort. Mal. v. 11. 9.—Claſs and Order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Cannæ* Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, cylindrical, elongated, minutely and irregularly toothed at the margin, permanent. *Cor.* of one petal; tube longer than the calyx, cylindrical, ſlender, curved; outer limb in three equal, oblong, recurved ſegments, not half the length of the tube; inner a ſomewhat obovate, large, notched, crenate, undivided lip, with a ſhort claw. *Stam.* Filament one, rather longer than the claw, ſtout, erect, with a lanceolate, acute, horizontal lobe, about its own length, on each ſide at the baſe, the ſummit ſimply notched, without any creſt or extenſion beyond the anther, which conſiſts of two oblong, diſtant, marginal lobes, about half the length of the filament, attached by their backs, their extremities on a level with the top of the filament. *Piſt.* Germen inferior, nearly globular; ſtyle thread-ſhaped, lying cloſe to the filament, between the lobes of the anther; ſtigma funnel-ſhaped, ſmall, erect, nearly on a level with the top of the filament. *Peric.* Capſule fleſhy, elliptic-oblong, or ſomewhat ovate, triangular, ſtriated, of three cells, and three coriaceous valves. *Seeds* numerous, roundiſh, ſomewhat angular, rough, each with a fine, membranous, evaneſcent tunic. *Recept.* central, ſhorter than the capſule when dry, winged with three longitudinal membranes, originally connected with the central ridge of each valve.

Eſſ. Ch. Anther of two diſtinct lobes. Filament with two tranſverſe lobes at the baſe; emarginate and ſimple at the ſummit. Outer limb of the corolla in three oblong lobes; inner a ſingle lip. Capſule of three cells and three valves, with a central receptacle. Seeds rough, tunicated.

1. E. *Cardamomum.* Leſſer, or Malabar, Cardamom. Maton as above. (Amomum repens; Sonnerat Ind. Or. v. 2. 240. t. 136. Roſc. Tr. of Linn. Soc. v. 8. 353. Willd. Sp. Pl. v. 1. 9. A. Cardamomum; White Tr. of L. Soc. v. 10. 230. t. 4, 5. Alpinia repens; Sm. Tr. of L. Soc. v. 8. 353, note. Specim. Pharm. Lond. unpubl. 8. A. Cardamomum; Roxb. Monandr. 38. Corom. v. 3. 19. t. 226. Cardamomum minus; Matth. Valgr. v. 1. 25. Camer. Epit. 11. f. 3. Bont. Hiſt. Nat. 126, the three rounder fruits only. Cluſ. Exot. 187. Ger. Em. 1542. Dale Pharmac. 276. C. ſimpliciter in officinis dictum; Bauh. Pin. 414. C. cum ſiliquis ſive thecis brevibus; Bauh. Hiſt. v. 2. 205. Elettari; Rheede Hort. Mal. v. 11. 9. t. 4, 5.)—Capſule ovate-oblong, obtuſely triangular. Calyx notched.—Native of the mountainous parts of Malabar, on lofty cloudy hills, flowering when the rainy ſeaſon begins, in April and May, ripening ſeed in October and November. *White*, *Roxburgh*. *Root* perennial, tuberous, with many fibres. *Leafy ſtems* from ſix to twelve feet high, erect, ſtraight, pale green, not red or browniſh, at the baſe. *Leaves* elliptic-lanceolate, pointed, from nine inches to two and a half feet long, and from one to five inches broad, ſpreading, dark green, ſmooth, entire; paler and more gloſſy beneath. *Stipula* emarginate, rounded, ſmooth. *Panicles* lateral, ſeveral from the tuberous baſe of each ſtem near the root, a ſpan long, much branched, many-flowered, ſpreading horizontally on the ground, jointed, ſmooth. *Bracteas* alternate, ovate-oblong, acute, at the baſe of each partial ſtalk, withering; *partial* ones ſolitary, tubular, cloſely embracing the germen and calyx, almoſt as long as the latter, and reſembling it in ſhape, but deciduous. Outer limb of the *corolla* green; *lip* white, veined with crimſon. *Capſule* when freſh fleſhy, ſmooth, nearly globular, but becoming bluntly triangular, coriaceous, and pale brown, when dry. *Seeds* blackiſh, gratefully aromatic and pungent, with a flavour of Camphor, eſteemed more agreeable and uſeful in food and medicine, than any others of this tribe. (See CARDAMOM, excluding what regards *Cardamomum majus*, &c.) This ſubject will be found explained under our ſupplementary article AMOMUM. Mr. White, who has given a moſt accurate and perfect hiſtory of this plant and its cultivation, under the name of *Amomum Cardamomum*, in Tr. of Linn. Soc. v. 10, above quoted, ſpeaks of its ſeeds as " one of the moſt valuable articles of modern luxury, regarded as a neceſſary of life, by moſt of the inhabitants of Aſia

Asia—a grateful and salubrious accessary of diet—whose general adoption by the civilized nations of the other quarters of the world is prevented only by its limited importation." This is certainly quite a new idea to us Europeans, who value this drug merely as a grateful and wholesome stomachic, on which account it becomes an article of commerce, having supplanted all its relatives in the apothecary's shop. Its general use in Asia, indeed, renders the plant a very important and profitable object of culture, though the harvest, occurring at the most unhealthy season, is not unattended by serious dangers. Fevers, fluxes, the bite of innumerable minute leeches, and the instantly fatal sting of the whip-snake, are mentioned as not uncommon mischiefs, to which is added the caustic quality of a shrubby plant, whose botanical characters have not been ascertained, but whose leaves produce dangerous, and sometimes fatal, ulcerations of the skin. The profit of the Cardamom farms, however, is so considerable, as to overcome all difficulties in their cultivation, and Mr. White thinks they might easily be greatly extended.

2. E. *major*. Greater Oblong Cardamom. (Cardamomum majus; Dale Pharmac. 276. Bont. Hist. Nat. 127, the fruit only? C. majus officinarum; Bauh. Pin. 413. C. majus vulgare; Ger. Em. 1542. Clus. Exot. 187. Lob. Ic. v. 2. 204. C. medium; Matth. Valgr. v. 1. 25. Camer. Epit. 11. f. 2. Barrel. Ic. obs. 1395. t. 971, the longest fruit. C. cum siliquis sive thecis longis; Bauh. Hist. v. 2. 205. Ensal; Herm. Mus. Zeyl. 66. Zingiber Ensal; Gærtn. t. 12. f. 5.)—Capsule lanceolate-oblong, acutely triangular, with flat sides. Calyx three-lobed.—Native of Java, according to Dale, who remarks that this kind of Cardamom was, even in his time, rarely used, some substituting for it Grains of Paradise, others the *Amomum verum*. (See AMOMUM.) Specimens of this species are indeed, at present, only to be found in the cabinets of collectors. We are persuaded they must belong to the same genus as the Malabar Cardamom. They appear to have a similar panicled inflorescence, and the structure of the *fruit*, with its central *receptacle*, coriaceous striated valves, and angular rough or rugged *seeds*, are the same in this as in the last. These *seeds*, however, are of a brighter, or reddish hue, and very inferior in flavour, far less powerful and less agreeable. The shape of the *capsule* is essentially different, being usually thrice as long, and much more acutely and strikingly triangular, flattened at the sides, and more evidently curved. It is similarly crowned with a long, cylindrical, permanent *calyx*, decidedly three-lobed, whereas that of the former is only crenate, or jagged. This part is unfortunately often rubbed off by those who collect the fruits for sale. If Bontius be right, there is so wide a difference between these two plants in the situation of their *flowers*, as would almost overturn their generic identity. He gives, under the title of *Cardamomum majus*, a figure with large, terminal, simply racemose *inflorescence*, which he compares to that of a Hyacinth, describing the plant as taller than a man, with very large *leaves*, *flowers* white with a purple limb, and the whole very beautiful. Two *capsules*, not unlike our plant, though by no means very like it, being represented cylindrical, not triangular, and described as long as the finger, accompany the above figure. We cannot, on mature consideration, think the synonym of Bontius rightly applied. Nevertheless, he speaks of the qualities as agreeing with his *C. minus*, supposed to be our *Amomum Cardamomum*, or *Amomum verum* of old writers, not the preceding *Elettaria Cardamomum*. Clusius, Gerarde, &c. rather copy the fruit from Bontius than from nature, and seem to take the *calyx* for the *stalk*.

ELEVATION, *Angle of*, for A R B *r.* R A B (*Plate* I. *Mechanics*, *fig.* 3.)

ELGIN, l. *ult.* By the return of 1811, the number of houses in the burgh and parish was 962, and of inhabitants 4602.

ELHAM, l. 3 from bottom, insert after London—and the parish contains 174 houses, and 992 inhabitants.

ELIZABETH, a township of Miami county, in Ohio, having 730 inhabitants.

ELIZABETH, *Cape*, l. 7, *r.* 1415; l. 14, *r.* 1874; and l. 15, *r.* 1734.

ELIZABETH-*Town*, col. 2, l. 1, after New York, insert—and contained, in 1810, 2977 inhabitants, of whom 222 were slaves; l. 6, *r.* 2368. Add—Also, a town of Kentucky, in Harden county, containing 181 inhabitants, of whom 47 are slaves.

ELK LICK, a township of Somerset county, in Pennsylvania, having 1118 inhabitants.

ELKLAND, a township of Lycoming county, in Pennsylvania, having 91 inhabitants.

ELK RUN, a township of Columbiana county, in Ohio, containing 787 inhabitants.

ELLESMERE, col. 2, l. 7 and 8, *r.* 1064 and 5630.

ELLINGTON, l. 2, *r.* 1344 inhabitants.

ELLIOT, a town of York county, in the district of Maine, containing 1650 inhabitants.

ELLSWORTH. Add—and containing 614 inhabitants.—Also, a town of Grafton county, in New Hampshire, having 142 inhabitants.—Also, a township of Trumbull county, in Ohio, having 202 inhabitants.

ELMHAM, NORTH. Add—By the return of 1811, the parish contains 127 houses, and 896 persons.

ELMINA, l. 8 from bottom, for kasso *r.* brasso.

ELMORE, l. 2, *r.* 157.

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ELOCUTION. Add to the references—ACTION, ARTICULATION, PASSION, PRONUNCIATION.

ELSENBOROUGH, a town in Salem county, in New Jersey, having 517 inhabitants.

ELTHAM, l. 3, *r.* 285 houses, and 1813 inhabitants.

ELWUND, *Mount*, a range of mountains in Irak, in Persia, most probably the mount Orontes of Diodorus, about twelve miles in length. Near its summit, which is tipped with continual snow, and seldom obscured by clouds, is a beautiful valley, perfumed by a thousand sweet-scented flowers. This mountain is famous in the East for its mines, waters, and vegetable productions. The natives of Hamadan, which is situated at the foot of this mountain, believe that some of its grasses have the power of transmuting the basest metals into gold, as well as of curing any distemper to which the human frame is exposed; and the Indians suppose that it contains the philosopher's stone.

ELY, col. 2, l. 4, after includes, insert—5977 houses, occupied by 32,443 inhabitants, &c. Col. 4, l. 43, *r.* 4249; l. 44, *r.* 928.

ELY, or *Elie*. In 1811 this parish contained 157 houses, and 886 persons; *viz.* 365 males, and 521 females.

EMBANKMENT, col. 25, l. 4 from bottom, insert—In 1809 about 6000 acres of land were obtained by an embankment of the sea upon Cartmel sands, in Lancashire. The embankment at Tre-Madoc, in Carnarvonshire, was completed in 1811.

EMDEN, in *Geography*, a township in the district of Maine, and county of Somerset, having 351 inhabitants.

EMERY, l. 11, after Tennant, insert—(Phil. Transf. for 1802, p. 401.)

EMETIN, in *Chemistry*, a name given by MM. Majendie and Pelletier to a fubftance extracted by them from ipecacuanha, and fo called becaufe it conftitutes the principle to which that root owes its emetic qualities. Emetin may be obtained by digefting ipecacuanha in fulphuric ether, and afterwards in alcohol. The alcoholic folution is then to be evaporated to drynefs, rediffolved in water, and acetate of lead dropped into the folution. The copious precipitate thus obtained being well wafhed and diffufed through water is then to be expofed to the action of fulphuretted hydrogen. The lead is thus precipitated while the emetin remains diffolved in water; and the liquid being filtered and evaporated to drynefs, the emetin will be obtained in a ftate of purity.

Emetin thus obtained exifts in the form of brownifh tranfparent fcales. Its tafte is bitter and a little acrid, but not difagreeable. It has no fmell. At the temperature of boiling water it is not changed. When expofed to a higher heat it does not melt, but fwells, becomes black, and is converted into water, carbonic acid gas, a little oil, and acetic acid, but yields no trace of ammonia, which indicates that it does not contain azote. A very fpongy and light coal remains. When expofed to the air, emetin undergoes no change, except the air be very damp, when it deliquefces. It diffolves readily in water and alcohol, but not in fulphuric ether. It does not cryftallize.

Sulphuric and nitric acids, when concentrated, decompofe it. Muriatic and phofphoric acids diffolve it without alteration, and it may be feparated from them by faturation with an alkali. Acetic acid is one of the beft folvents of it. Gallic acid and infufion of galls precipitate it immediately, as do folutions of moft of the metallic falts.

Half a grain of this fubftance occafions violent vomiting, followed by fleep, and the animal awakes in a ftate of health. A larger quantity, as twelve grains, or even fix grains, produces violent vomiting and fleep, followed by death, which appears to take place in confequence of the fevere inflammation of the lungs and inteftinal canal, produced by large dofes of this folution.

ENAMEL *of the Teeth, Chemical Properties of.* See TEETH.

ENCHYLÆNA, in *Botany*, from χυλος and λαινος, alluding, we prefume, to its fucculent habit, and ftony place of growth.—Brown Prodr. Nov. Holl. v. 1. 407.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Chenopodeæ*, Br.

Eff. Ch. Calyx five-cleft; pulpy and clofed in the fruit. Stamens inferted into its bafe. Stigmas two or three, thread-fhaped. Capfule membranous, covered. Seed depreffed.

Procumbent *fhrubs*, very much branched, with alternate flefhy *leaves*, and axillary, folitary, feffile *flowers*, without *bracteas*. There are two New Holland fpecies.

ENDIAN. Add—It lies in N. lat. 30° 18′, 20 miles from Zeitoon, occupies both banks of the Tab, and is nearly two miles in circuit. It trades with Baffora and Behaban, and its population is between 4000 and 5000 fouls.

ENDIANDRA, in *Botany*, Br. Prodr. Nov. Holl. v. 1. 402, a triandrous genus, perhaps hardly diftinct from *Cinnamomum*, which Mr. Brown feparates from *Laurus* of Linnæus; and alfo very near his CRYPTOCARYA, fee that article.

ENFIELD, l. 4, after parliament, infert—in 1811, 1115 houfes, and 6636 inhabitants. The town has only 524 houfes, and 3055 inhabitants, and is one of the four quarters into which the parifh is divided.

ENFIELD, in America, l. 7, *r.* 1846; l. 10, *r.* 1291.

ENFILADE, col. 5, l. 34, *fig.* 4. Col. 6, l. 20, infert—(*fig.* 5.)

ENGINE, col. 9, l. 6, for levelled *r.* bevelled.

ENGLAND, NEW. Add—See AMERICA and UNITED STATES.

ENGURI, a river of Mingrelia, which rifes in the mountains of the Abgazians, and flows clofe to the fortrefs of Rugh, between Illani and Anaklie, into the Euxine. Near its fource it divides into two branches; and as they never again unite, the right branch retains the name of Enguri; but the left is called Schariftkali, under which denomination it croffes the whole of Mingrelia from N. to S. and falls into the Phafis, feven verfts above the city of Potti.

ENOSBURGH, a town of Franklin county, in Vermont, containing 704 inhabitants.

ENUNCIATIVE ORGANS, *dele* the reference.

EPHRATA, or DUNKARD-*Town*, infert—(which fee).

EPIBLEMA, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 315.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx and petals equal, fpreading. Lip ftalked, undivided, with two fafciculated thread-fhaped proceffes at the bafe; and an appendage attached to the bottom of the column, below the claw of the lip. Anther parallel to the ftigma, with a petal-like lobe at each fide.

1. E. *grandiflorum*.—Gathered by Mr. Brown, on the fouth coaft of New Holland. *Flowers* handfome, blue, refembling thofe of a THELYMITRÆ; fee that article.

EPIDERMIS. Add—See INTEGUMENTS.

EPIDOTE. See MINERALOGY, *Addenda*.

EPIGLOTTIS. See DEGLUTITION and LARYNX.

EPITHYME, for EPITHEOS *r.* CUSCUTA.

EPPING, l. *penult. r.* 334 and 1874.

EPPING, in America, l. 3, *r.* 1182.

EPSOM, l. 4, *r.* 1811—397 houfes, 2515 inhabitants.

EPSOM, in America, l. 4, *r.* 1810, and 1156.

EPWORTH, l. 1, for Lindfey *r.* Manley, weftern; l. 4, *r.* 274; l. 5, *r.* 1502.

EQUAL ALTITUDE, *Inft. by the Earl of Ilay*, col. 1, l. 10 from bottom, for five pairs *r.* two pairs.

EQUATION-MECHANISM, col. 2, l. 33, for received *r.* viewed.

EQUATION, *Contrivances by the Rev. William Pearfon*, col. 1, l. 15 from bottom, for was reprefented *r.* is reprefented. Col. 10, l. 24, for with *r.* within. Col. 11, l. 22, for arcs *r.* areas.

EQUATORIAL, *Explication and Ufe of the Tables*, col. 1, l. 19 from bottom, for (like Table I.) *r.* (like Table V.)

EQUATORIAL-*Micrometer*, col. 2, l. 12, for *fig.* 3. *r. fig.* 4.

EQUES, in *Ichthyology*, *Knight-fifh*. See CHÆTODON *lanceolatus*. This is a native of the American feas; in length about twelve inches.

ERATOSTHENES, col. 2, l. 9 from bottom, *r.* Bib.

ERBILLE, in *Geography*, a town of Perfia, which is probably that Arbela fo famous for the final victory obtained by Alexander over Darius, and the capital of the province of Adiabene, is now reduced to a wretched mud town, with a population not exceeding 3000 fouls. N. lat. 36° 11′.

EREMOPHILA, in *Botany*, from ερημος, *a defert*, alluding to its place of growth.—Br. Prodr. Nov. Holl. v. 1. 518.—Clafs and order, *Didynamia Angiofpermia*. Nat. Ord. *Myoporinæ*, Br.

Eff. Ch. Caylx in five deep fegments; changed and membranous in the fruit. Cor...... Stigma undivided. Drupa dry, with four cells, and four feeds.

Two rufh-like fhrubs, *E. oppofitifolia* and *alternifolia*, found on the inhofpitable fouth coaft of New Holland. Their *leaves* are femicylindrical. *Flowers* folitary, ftalked.

ERIACHNE, from ἔριον, *wool*, and ἄχνη, *a husk*.—Br. Prodr. N. Holl. v. 1. 183.—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eff. Ch. Calyx of two equal valves, two-flowered. Florets sessile, of two bearded valves. Nectary of two scales. Stigmas feathery.

A genus of tropical grasses, akin to *Aria*, generally downy; their *leaves* narrow, *flowers* panicled. Mr. Brown describes ten New Holland species, none of them in any other author. In six of them, the outer valve of the *corolla* has a terminal *awn*.

ERIE, l. 2, *r*. 3758; after Erie, add—borough, containing 394 inhabitants, of whom, in 1810, 14 were slaves.

ERIOCHILUS, in *Botany*, from ἔριον, *wool*, and χεῖλος, *a lip*, because the disk of the nectary is downy.—Br. Prodr. Nov. Holl. v. 1. 323.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx ringent; lower leaves stalked, under the lip. Petals smaller, erect. Lip stalked; disk downy, without glands. Column semicylindrical; simple at the top. Anther terminal, permanent, pointless; cells close together. Masses of pollen four in each.

1. E. *autumnalis*. Br. n. 1. (Epipactis cucullata; Labill. Nov. Holl. v. 2. 61. t. 211. f. 2.)—Native of the east and south parts of New Holland. *Bulb* globular. *Leaf* radical, enclosed in a sheath, with the base of the *stalk*, which is four or five inches high, naked, bearing from one to three white or purplish *flowers*. Akin to Caladenia.

ERIVAN. Add—By various sieges, the last of which was in the year 1808 by the Russians, this town is reduced to a ruinous condition. It has been repeatedly taken both by the Turks and Persians, and has remained in the possession of the latter from the peace of Nadir Shah in 1748. This city, which gives name to a province bounded on the N. and W. by the Mossian hills, on the S. by the Araxes, and on the E. by the district of Karabaug and Karadaug, is situated on the banks of the river Zengui, and defended by a fortress, of an elliptical form, upwards of 6000 yards in circumference. The N.W. side of the town is built on a precipice, impending over the river 100 toises in height; but is surrounded by the fort which is encompassed by two strong walls, flanked with towers.

ERKOOM, in *Ornithology*, a bird of Abyssinia, which belongs to a large tribe, differing principally in the beak and horn. The horn is sometimes seen upon the back, and sometimes upon the forehead, above the root of the beak. In the east part of Abyssinia, it is called *Abba Gumba*, in the language of Tigré; but on the western side of the Tacazzé, it is called Erkoom. Its groaning noise gives occasion to the first of its names. By naturalists, this bird is called the Indian crow or raven. The colour of the eye is a dark brown, or rather of a reddish cast; the eye-lashes are large: its length from the tip of the beak to the extremity of the tail is three feet ten inches; the length of the beak is ten inches, and the length of the horn three and a half inches. The colour of this bird is sooty-black; the large feathers of the wing are ten in number, milk-white both without and within; the tip of his wings reaches nearly to his tail; and at his neck he has those protuberances like the turkey-cock, which are light blue, but turn red upon his being chafed, or when the hen is laying. He seems to prefer running on the ground to flying; but when he is raised, he flies to a considerable distance. Its smell is rank, and he is said to live in Abyssinia upon dead carcases; but this Mr. Bruce conceives to be a mistake, as he never follows the army like birds of prey. His food seemed to be the green beetles that are found upon the tops of the teff, and in order to obtain them, he frequents fields of this grain. He builds in large thick trees, and if he can, always near churches, and his nest is covered like that of a magpie. Mr. Bruce, in the Appendix to his Travels, has described this bird, and accompanied his description with a drawing.

ERROL, l. 2, for Grafton *r*. Coos. Add—and in 1810, contained 38 inhabitants.

ERUCARIA, in *Botany*, Gærtn. v. 2. 298. t. 143. Brown in Ait. Hort. Kew. v. 4. 122. See Cordylocarpus.

ERVING'S Gore, in *Geography*, a town of Hampshire county, in Massachusetts, having 160 inhabitants.

ERYTHRÆA, in *Botany*, ἐρυθραία, *red*. Renealm. Spec. 77. t. 76. Brown Prodr. Nov. Holl. v. 1. 451. See Chironia *Centaurium*, *maritima*, *spicata*, &c.

ERZERUM, l. 11, after church, add—Mr. M'Kinneir estimates the whole number of inhabitants at 100,000; 15,000 of whom are Armenians, and the rest Turks, with the exception of 200 or 300 Greeks. Here are nearly 40 mosques, four of which are handsome, a Greek church, a large Armenian chapel, and at a distance from the city three celebrated monasteries. The bazaars are extensive. In winter the cold is intense; but the air being pure, and the water good, the natives are stout and healthy. N. lat. 39° 57′. E. long. 40° 57′. The pachalic of Erzerum is the most considerable in Armenia; it is divided into twelve districts, and governed by a pacha of three tails, who resides at Erzerum.

ESCAPEMENT, *Isochronal for a Pendulum*, col. 2, l. 7 from the bottom, for C N *r*. Q N. Col. 3, l. 13, for N D *r*. N Q.—*Escapement by Alex. Cumming*, col. 1, l. 10 from the bottom, for D *r*. H.

ESKIMAUX Bay, *r*. Labrador.

ESOX, col. 5, l. 25, after represented, insert—curving.

ESSEX, l. 5 from bottom, *r*. 42,829 and 252,473.

Essex, in America, l. 7, *r*. 8; l. 8, *r*. by the census of 1810, 71,888 inhabitants.

Essex, in Virginia, l. *ult*. *r*. 9376 inhabitants, of whom, in 1810, 5659 were slaves.

Essex, in New Jersey, l. 4, for 3 *r*. 9; l. 5, *r*. 25,984 and 1129.

Essex, in New York, add—containing 9477 inhabitants.

Essex, in Vermont, add—containing 14 townships, and 3087 inhabitants.

Essex, a township, &c. l. 2, *r*. 957.

ESTLE, a county of Kentucky, containing 2082 inhabitants, of whom, in 1810, 133 were slaves.

ETHER, in *Chemistry*. The specific gravity of sulphuric ether, as recently determined by M. Theodore de Saussure, is .7155 at 68°; and it boils in vacuo at − 20°, and not at 20°, as stated in the Cyclopædia. The specific gravity of the vapour of sulphuric ether, according to Mr. Dalton, is 2.25; according to M. Gay Lussac, whose experiments were made with great care, it is 2.586, that of air being 1. M. Theodore de Saussure has lately published an analysis of sulphuric ether: according to this ingenious chemist, it is composed of

Hydrogen - - -	14.40
Carbon - - - -	67.98
Oxygen - - - -	17.62
	100.00

Which proprotions are nearly equivalent to

Olefiant gas - - -	80.05
Water - - - -	19.95
	100.00

Dr.

Dr. Thomson, however, feems to doubt the perfect accuracy of this analyfis, and fuppofes rather that it is a compound of four atoms of olefiant gas and one atom of water, which fuppofition nearly agrees with the fpecific gravity of the vapour of ether above-mentioned, as determined by M. Gay Luffac. Thus the fp. gr. of olefiant gas being .974.

Two volumes of it will weigh	1.948
The fp. gr. of the vapour of water is - - -	.625
	2.573

which certainly differs but little from 2.586, the true fp. gr. according to M. Gay Luffac.

Nitric Ether.—The properties of this fingular fubftance have been lately inveftigated by Thenard. This eminent chemift found the following to be the beft mode of preparing it. Equal parts of alcohol and nitric acid, of the fp. gr. 1.283, were put into a retort, to the beak of which was luted a glafs tube, which was plunged to the bottom of a long narrow glafs jar, half filled with a faturated aqueous folution of common falt. From the top of this jar paffed another tube, which went to the bottom of another fimilar jar, filled with the fame folution. In this manner, five other fimilar jars were connected with each other, and from the laft a tube paffed to a water-trough, to receive the gafeous products in proper veffels. Each of thefe jars was furrounded with a mixture of fnow and falt, to keep it as cool as poffible. A moderate heat was then applied to the retort, which produced fo violent an effervefcence, that it became neceffary to moderate it by withdrawing the fire, and applying cold water to the outfide of the retort. At the end of the operation, the ether was found floating on the furface of the folution in the different jars, but more efpecially in the firft. It was feparated, and to remove the nitrous and acetic acids with which it was contaminated, it was agitated in a clofe phial with a fufficient quantity of chalk. Thus purified, it poffeffes the following properties.

It has a flightly yellow colour, and a very ftrong etherial odour. Its tafte is likewife ftrong and peculiar. It is rather heavier than alcohol. It is much more volatile than fulphuric ether, the heat of the hand being fufficient to make it boil; hence it produces a very confiderable degree of cold by its evaporation. It is lighter than water, and requires about forty-eight parts of that fluid to diffolve it. The folution has an agreeable odour, like that of apples. It is foluble in alcohol in every proportion. It is very inflammable. When kept for fome time, both nitrous and acetic acids are formed in it. The fame acids alfo are produced if it be heated, or even agitated with water. It has alfo the property of abforbing thefe acids very readily, and acquiring the property of reddening vegetable blues. Its vapour is much more elaftic than that of fulphuric ether.

According to Thenard, it is compofed of

Hydrogen - - -	8.54
Carbon - - - -	28.45
Oxygen - - - -	48.52
Azote - - - -	14.49
	100.00

But Dr. Thomfon does not feem to place much reliance in the accuracy of this analyfis.

Muriatic Ether.—Since the article ETHER was written for the Cyclopædia, this fpecies of ether has been examined with great care by Gehlen, and ftill more recently by Thenard, which latter chemift has given the following as the beft mode of preparing it.

A retort is to be nearly filled with a mixture of equal bulks of muriatic acid and alcohol, both as ftrong as poffible. To prevent the effects of the violent ebullition which would otherwife take place on the application of heat, a few grains of fand are to be introduced into the retort. From the beak of the retort a tube paffes into a glafs jar, twice the fize of the retort, and furnifhed with three mouths. This jar fhould be half filled with water of the temperature of about 70°. Into the fecond mouth a fhort tube of fafety is to be luted; and into the third, a tube which paffes into a water-trough to receive the gas. On the application of heat, the ether efcapes in the form of gas. This gas is colourlefs, does not affect vegetable colours nor lime-water. Its fp. gr. is 2.219, that of air being 1. At the temperature of 64°, water diffolves its own bulk of it. At the temperature of 52°, it becomes liquid ether.

Muriatic ether in its liquid ftate is colourlefs like water, very liquid, has no action on vegetable blues, and has the fame fmell and tafte as in the gafeous ftate. At the temperature of 41°, Thenard afcertained its fp. gr. to be .874. It is much more volatile than alcohol, or even fulphuric ether. None of the ufual tefts indicate the prefence of muriatic acid in it. When burnt, however, a confiderable proportion of this acid is difengaged, a fact firft obferved by Gehlen, and fince fully confirmed by Thenard. From Thenard's analyfis, it appears that this fingular compound is compofed of

Muriatic acid - - -	29.44
Carbon - - - -	36.61
Oxygen - - - -	23.31
Hydrogen - - -	10.64
	100.

Dr. Thomfon is difpofed to confider it as a compound of one volume of olefiant gas, and one volume of muriatic acid gas, condenfed into one volume; or, what is the fame thing, of four atoms olefiant gas, and one atom of muriatic acid. On this fuppofition, its conftituents will be

Five atoms hydrogen	=	6.25
Four atoms carbon	=	30.00
One atom chlorine	=	45.00
And the weight of its atom will be - -	=	81.25

Hydriodic Ether.—This ether was difcovered by M. Gay Luffac. He formed it by mixing together two volumes of abfolute alcohol, and one volume of hydriodic acid of the fp. gr. 1.7, and diftilling in a water-bath. Hydriodic ether, after being well wafhed with water, is perfectly neutral. Its odour is ftrong, and analogous to that of other ethers. In a few days it acquires a reddifh colour, which is inftantly removed by mercury or potafh. Its fp. gr. at 72° is 1.9206. It boils at the temperature of 148½°. It is not inflammable, but merely gives out purple vapours when put upon burning coals. When paffed through a red-hot tube, it is decompofed, an inflammable carburetted gas is obtained, hydriodic acid evolved, and fome charcoal depofited. This ether has not been analyfed; but Dr. Thomfon is difpofed to believe, from analogy, that it has a compofition fimilar to that of muriatic ether, or that it it is compoſed of four atoms olefiant gas, and one atom of hydriodic acid.

Acetic Ether.—The original experiments of Lauraguais and Scheele have been lately repeated by other chemiſts, and particularly by Thenard. Thenard ſucceeded in forming this ether, by repeatedly diſtilling together very concentrated acetic acid and alcohol. No gaſeous product was evolved. The ſuperfluous acid was neutralized by potaſh, and the ether finally obtained by a cautious diſtillation of the reſulting liquid from acetate of potaſh. Acetic ether thus procured is limpid and colourleſs. Does not redden vegetable blues. Poſſeſſes a peculiar taſte, quite different from that of alcohol. Its ſp. gr. at $44\frac{1}{2}^{\circ}$ is .866. It boils at the temperature of 160°. It burns with a yellowiſh-white flame, and acetic acid is evolved during its combuſtion. At the temperature of 62°, it requires more than ſeven times its weight of water to diſſolve it. It appears from theſe and other properties to be a compound of acetic acid and alcohol.

Formic Ether.—This was firſt formed by Gehlen. It may be prepared preciſely in the ſame way as acetic ether, merely ſubſtituting the formic for the acetic acid. Formic ether has an agreeable odour, ſimilar to that of peach bloſſoms. Its taſte is likewiſe ſimilar, leaving an impreſſion of ants. At a temperature of 63°, its ſp. gr. is .9157. It burns with a blue flame, having yellow edges, and at the above temperature is ſoluble in nine times its weight of water. This ether has not been analyſed.

ETON, col. 3, l. 25, *r.* to be ſeen; l. 57, *r.* 314 and 2279.

EVANDRA, in *Botany*, from ευ and ανηρ, alluding to its abundant ſtamens, in a tribe where three is the uſual number.—Br. Prodr. Nov. Holl. v. 1. 239.—Claſs and order, *Dodecandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ.

Eſſ. Ch. Spikelets generally ſingle-flowered; ſcales imbricated, moſtly empty. Stamens twelve or more. Nut cylindrical, cruſtaceous, without briſtles at the baſe; kernel ſmooth. Tall bog-plants, from the ſouth coaſt of New Holland. Scales blackiſh externally; upper ones ſilky internally. Somewhat allied to CHRYSITRIX. There are two ſpecies.

1. E. *ariſtata.* Stem leafy. Spikelets panicled, awned.

2. E. *pauciflora.* Stem naked. Spikelets ſolitary or in pairs, without awns.

EUCHILUS, Brown in Ait. Hort. Kew. v. 3. 17, ſeems to us a PULTENÆA; ſee that article.

EUCHLORINE, in *Chemiſtry.* See OXYMURIATIC *Acid.*

EUCLID, in *Geography*, a townſhip of Cayahuga, in Ohio, containing 283 inhabitants.

EUCLIDIUM, in *Botany*, from ευ, *well*, and κλειδοω, *to ſhut up*, becauſe of the firmly-cloſed ſeed-veſſel.—Br. in Ait. Hort. Kew. v. 4. 74.—Claſs and order, *Tetradynamia Siliculoſa.* Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch tumid, of two cells, with evident ſutures but not burſting. Seeds ſolitary. Cotyledons flat.

1. E. *ſyriacum.* Syrian Euclidium. Ait. n. 1. (Anaſtatica ſyriaca; Linn. Sp. Pl. 895. Jacq. Auſtr. t. 6.)—Pouch rough. Style awl-ſhaped, permanent. Leaves lanceolate, ſtalked.—Native of the warmer parts of Europe. What the other ſpecies may be we are not informed.

EUDESMIA, from ευ, *well*, and δεσμιος, *confined.*—Brown Bot. of Terr. Auſtr. 67.—Claſs and order, *Polyadelphia Polyandria.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Eſſ. Ch. Calyx four-toothed, ſuperior. Petals cloſely united into a deciduous lid, with four furrows. Stamens in four ſets, alternate with the calyx-teeth, combined at the baſe. Capſule of four cells, opening at the top. Seeds numerous.

1. E. *tetragona.* Br. as above, t. 3.—In expoſed barren places near the ſhore, about Lucky bay, on the ſouth coaſt of New Holland, flowering and bearing fruit in January. *Br.* A *ſhrub*, three to five feet high, with ſquare, bordered *branches.* *Leaves* ſtalked, ovate-oblong, moſtly oppoſite, coriaceous, four or five inches in length, entire, glaucous, dotted with reſinous points. *Umbels* axillary, ſtalked, of three or four *flowers*, whoſe numerous white *ſtamens* ſpread conſpicuouſly after the lid is fallen. We believe this fine plant is living in the green-houſe of the Comteſſe des Vandes, at Bayſwater.

EUDIOMETER. See LABORATORY.

EUDIOMETRY. Add—See LABORATORY.

EVELYN, l. 2, inſert after Surrey—October 31ſt; l. 4, for Chriſtchurch *r.* Baliol college; l. 5, inſert—ſpent much of his time. At the cloſe of his article, add—For a farther account of the life and writings of this excellent perſon, we refer to the "Memoirs," publiſhed from original MSS. in 2 vols. by William Bray, eſq. Lond. 1818.

EVESHAM, col. 2, l. 10 from the bottom, *r.* 674 houſes, and 3068 inhabitants.

EVESHAM, in America, add—In 1810, it contained 3445 inhabitants.

EUPOMATIA, in *Botany*, from ευ, *well*, and πωμαζω, *to ſhut up with a cover.*—Brown Bot. of Terr. Auſtr. 65.—Claſs and order, *Monadelphia Polyandria.* Nat. Ord. *Coadunatæ*, Linn. *Annonaceæ*, De Cand. Br.

Eſſ. Ch. Calyx a ſuperior, entire, deciduous lid. Corolla none. Inner ſtamens dilated, imbricated, without anthers. Styles none. Stigmas numerous, depreſſed. Berry globoſe, bordered, with many ſeeds.

1. E. *laurina.* Br. as above, t. 2.—In mountainous woods, and about great rivers, at Port Jackſon, flowering in December and January. A ſlender *ſhrub*, from five to ten feet high, very ſmooth. *Leaves* alternate, on ſhort ſtalks, obovate-oblong, acute, entire, coriaceous, four or five inches long. *Flower-ſtalks* axillary, ſhort, bearing two or three ſmall leaves, and one *flower*, whoſe numerous, pale yellow, perfect *ſtamens* ſpread, in a radiant manner, after the *lid* is gone, diſplaying the broad imperfect ones, united with them below, overlapping the *ſtigmas.* Theſe ſuperfluous intruders are obſerved, by Mr. Brown, to be uſually eaten away by inſects. *Berry* three-quarters of an inch broad. *Seeds* oval, wrinkled.

EURYALE, the name of one of the Gorgons, adopted here to expreſs the thorny menacing habit of the plant. It might likewiſe be underſtood as alluding to the *ample area* of the leaves.—Saliſb. in Ann. of Bot. v. 2. 73. Ait. Hort. Kew. v. 3. 295.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Rhoeadeæ*, Linn. *Hydrocharides*, Juſſ. *Nymphææ*, Saliſb.

Eſſ. Ch. Calyx of four leaves, ſuperior. Petals numerous. Stigma ſeſſile, peltate. Berry crowned with the calyx. Seeds numerous, tunicated.

1. E. *ferox.* Prickly Euryale. Ait. n. 1. Roxb. Corom. v. 3. 39. t. 244. Anneſlea ſpinoſa; Andr. Repoſ. t. 618.—Native of lakes and ponds in India, to the eaſt of Calcutta. *Roxb.* This has the habit of a *Nymphæa.* The floating peltate *leaves*, cloven at the baſe, are from one to four feet wide; purple beneath; their ribs, veins, and *ſtalks*, like the *flower-ſtalks*, *calyx*, and *fruit*, armed copiouſly with ſharp prickles. *Flowers* comparatively ſmall, purple, with yellow ſtamens. *Fruit* about two inches in diameter. *Seeds*, or *nuts*, the ſize of a large pea, each in a looſe coloured *tunic.*

tunic. This noble plant has flowered in the duke of Marlborough's aquarium at White Knights. *Anneslea* was the name originally intended by Dr. Roxburgh.

EUSTREPHUS, from ευ, *well*, and ϛρεϕω, *to turn*, or *twine.*—Brown Prodr. Nov. Holl. v. 1. 281. Ait. Hort. Kew. v. 2. 272.—Clafs and order, *Hexandria Monogynia.* Nat. Ord. *Afphodeleæ*, Br.

Eff. Ch. Corolla in fix deep fegments; three innermoft fringed. Anthers erect. Stigma triangular. Capfule pulpy, of three cells, and three valves, with partitions from their centre. Seeds feveral; fcar crefted.

Twining leafy *fhrubs*, from the warmer parts of New Holland, with alternate, ribbed, entire *leaves;* fimple, aggregate, drooping *flower-ftalks;* pale purple elegant *flowers;* yellow *fruit*, and rather large black *feeds*.

1. E. *latifolius.* Ovate Fringe-bloffom. Ait. n. 1. Br. n. 1. Curt. Mag. t. 1245.—Leaves more or lefs ovate. Filaments combined at the bafe. Tips of the anthers twifted in fading.—Native of New South Wales. *Dr. White.*

2. E. *anguftifolius.* Linear Fringe-bloffom. Br. n. 2.—Leaves linear-lanceolate. Filaments diftinct. Tips of the anthers always ftraight.—Found within the tropic, as is alfo the firft fpecies. *Mr. Brown.*

EUTAXIA, Br. in Ait. Hort. Kew. v. 3. 16, we fcruple to feparate from DILLWYNIA: it is our fourth fpecies there defcribed.

EUTHALES, from ευ, *well*, and θαλειν, *to flourifh* or *bloffom.*—Br. Prodr. Nov. Holl. v. 1. 579. Ait. Hort. Kew. v. 1. 363.—Clafs and order, *Pentandria Monogynia.* Nat. Ord. *Goodenoviæ*, Br.

Eff. Ch. Calyx inferior, tubular, in five unequal fegments. Tube of the corolla adhering to the germen beneath, fplit on one fide above; limb two-lipped. Anthers diftinct. Stigma with a two-lipped cover. Capfule of four valves; two-celled at the bafe. Seeds imbricated, compreffed.

1. E. *trinervis.* Three-ribbed Euthales. Br. n. 1. Ait. n. 1. (Velleia trinervis; Labill. Nov. Holl. v. 1. 54. t. 77. Goodenia tenella; Andr. Repof. t. 466. Curt. Mag. t. 1187.)—From the fouth coaft of New Holland. An herbaceous perennial plant, with hairy radical *leaves*, forked radical *flower-ftalks*, and handfome golden *flowers* with a dark-purplifh, central, divided fpot.

EWELL, l. 7, *r.* 1811, 225 houfes, and 2135 inhabitants.

EXARRHENA, in *Botany*, from its prominent ftamens, in which it feems chiefly to differ from *Myofotis.*—Br. Prodr. Nov. Holl. v. 1. 495.—The only fpecies is *E. fuaveolens*, found in Van Diemen's ifland, a hairy herb, with decurrent *leaves*, and fragrant white *flowers*.

EXECUTION, in *Painting*, col. 4, l. 2, *r.* Janus.

EXETER, col. 4, l. 23 from the bottom—The number of inhabitants in the city of Exeter and county of the fame, by the return of 1811, was 2879 houfes, and 18,896 inhabitants.

EXETER, in America, l. 17, *r.* 8759.——In Wafhington county, l. 3, *r.* 2236, and add—Alfo, a county of New York, containing 9477 inhabitants.—Alfo, a townfhip of Berks county, in Pennfylvania, having 1194 inhabitants.

EXHALING VESSELS. See *Exhalant Syftem* under HEART.

EXMOUTH, l. 18, *r.* 459 houfes, 2301 inhabitants; l. 19, *r.* 371.

EXPANSION, col. 3, l. 31, for expands *r.* contracts.

EXPANSION *of the Gafes.* See GAS.

EXPONENTIAL EQUATION, *dele* the reference.

EXPOSURE, col. 2, l. 2, for fouthern *r.* northern.

EXPRESSION, PHYSIOGNOMICAL. See EMOTION, and GESTURE.

EXPRESSION, in *Painting*, col. 9, l. 37, for woman *r.* women.

EXTRACT—EXTRACTIVE *Principle*, in *Chemiftry.* Great confufion exifts in different chemical authors refpecting thefe terms. Formerly the term *extract* was applied to all thofe fubftances which were extracted from plants by means of water or fpirits; but of late it has been confined by many to a fubftance which is fuppofed to exift in many plants, and which may be obtained tolerably pure from the bark of the cinchona officinalis, according to the experiments of Schrader. Other chemifts, however, ftill ufe the term *extract* in its original fenfe; hence Dr. Thomfon, to prevent ambiguity, has chofen to diftinguifh the principle of Schrader by the term *extractive.* The following are the properties of *extractive*, according to Dr. Thomfon.

1. Soluble in water, and the folution is always coloured. When the water is flowly evaporated, the extractive matter is obtained in a folid ftate, and tranfparent; but when the evaporation is rapid, the matter is opaque.

2. The tafte of extractive is always ftrong, but it is very different according to the plant from which it is obtained.

3. It is infoluble in abfolute alcohol and in ether, but foluble in alcohol when it contains water.

4. By repeated folutions and evaporations, the extractive matter acquires a deeper colour, and becomes infoluble in water. This change is confidered as the confequence of the abforption of the oxygen of the atmofphere, for which the extractive principle has a great affinity. But if the folution be left to itfelf, expofed to the atmofphere, the extract is totally deftroyed in confequence of a kind of putrefaction which fpeedily commences.

5. When chlorine is poured into a folution containing extractive, a very copious dark yellow precipitate is thrown down, and the liquid retains but a light lemon colour. Thefe flakes are confidered as oxygenized extractive; it is now infoluble in water, but hot alcohol diffolves it.

6. The extractive principle unites with alumina, and forms with it an infoluble compound. Accordingly, if fulphate or muriate of alumina be mixed with a folution of extractive, a flaky infoluble precipitate appears, at leaft when the liquid is boiled; but if an excefs of acid be prefent, the precipitate does not always appear.

7. It is precipitated from water by concentrated fulphuric acid, muriatic acid, and probably by feveral other acids. When the experiment is made with fulphuric acid, the fumes of vinegar generally become fenfible.

8. Alkalies readily unite with extractive, and form compounds infoluble in water.

9. The greater number of metallic oxyds form infoluble compounds with extractive. Hence many of them, when thrown into its folution, are capable of feparating it from water. Hence alfo the metallic falts moftly precipitate extractive. Muriate of tin poffeffes this property in an eminent degree. It throws down a brown powder, perfectly infoluble, compofed of the oxyd of tin and vegetable matter.

10. If wool, cotton, or thread, be impregnated with alum, and then plunged into a folution of extractive, they are dyed of a fawn-brown colour, and the liquid lofes much of its extractive matter. This colour is permanent. The fame effect is produced if muriate of tin be employed inftead of alum. This effect is ftill more complete if the cloth be foaked in chlorine, and then dipped into the infufion of the extractive. Hence we fee that the extractive matter

matter requires no other mordant than oxygen to fix it on cloth.

11. When diftilled, extractive yields an acid liquid impregnated with ammonia.

It cannot be doubted, continues Dr. Thomfon, that there are many different fpecies of extractive matter, though the difficulty of obtaining each feparately has prevented chemifts from afcertaining their nature with precifion. Watery extracts, when obtained by flow evaporation to drynefs, always have an acid tafte, and redden litmus. They all yield a precipitate while liquid on the addition of ammonia. This precipitate is a compound of lime and infoluble extractive. Lime always caufes them to exhale the odour of ammonia. It has been afcertained, that the extractive principle is more abundant in plants that have grown to maturity than in young plants.

All the extracts prepared by apothecaries are compounds of the extractive principle with feveral others, even as many as eight or more, according to Dr. Thomfon. In fhort, this department of vegetable chemiftry is at prefent in a very confufed and imperfect ftate.

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EYE, *Phyfiology of the*, col. 6, l. 26 from bottom, for an inch *r.* one-tenth of an inch.

Eye, *Humours of, Chemical Properties of.* Some experiments have been made on thefe fluids, the refults of which deferve to be briefly mentioned.

Aqueous Humour.—Mr. Chenevix found the fp. gr. of the aqueous humour of the fheep at 60° to be 1.009. This fluid fcarcely affects vegetable blues while frefh. On expofure to heat, a flight coagulum is formed. Tannin occafions a precipitate in it, both before and after boiling. Nitrate of filver likewife produces a precipitate, but no other metallic falt. According to Berzelius, 100 parts of it confift of

Water - - -	98.10
Albumen, a trace - -	
Muriates and lactates -	1.15
Soda with animal matter, foluble only in water - -	.75
	100.

Vitreous Humour.—This poffeffes very nearly the fame properties as the aqueous. Even its fp. gr. is the fame, or only a very little heavier. According to Berzelius, it is compofed of

Water - -	98.40
Albumen - -	.16
Muriates and lactates -	1.42
Soda with animal matter, foluble only in water - -	.02
	100.

Cryftalline Lens.—The fp. gr. of this is 1.100. When frefh it has little tafte. It putrefies very rapidly. It is almoft completely foluble in water. The folution is partly coagulable by heat, and gives a copious precipitate with tannin both before and after boiling. According to Berzelius, it is compofed of

Water - - -	58.0
Peculiar matter - -	35.9
Muriates, lactates, and animal matter foluble in alcohol -	2.4
Animal matter, foluble only in water, with fome phofphates	1.3
Portions of the remaining infoluble cellular membrane -	2.4
	100.

The peculiar matter of the lens poffeffes all the chemical properties of the colouring matter of the blood, except colour.

The humours of the human eye are compofed of the fame ingredients as thofe of the fheep; but they differ in their fp. gr. Thus the fp. gr. of the human aqueous and vitreous humour is 1.0053; that of the cryftalline 1.0790. The humours of the eyes of oxen alfo refemble thofe of the fheep. The fp. gr. of the aqueous and vitreous humours is 1.0088; that of the cryftalline 1.0765. The cryftalline of the ox weighed thirty grains. When the whole was pared away, except fix grains in the centre, the fp. gr. was found to be 1.194.

Sir H. Davy found the fame conftituents in the eyes of birds; but the fp. gr. of the vitreous humour in thefe animals is greater than the fp. gr. of the cryftalline.

Pigmentum Nigrum.—This curious fubftance has been examined by Gmelin. From 500 eyes of oxen and calves he collected 75 grains. Its colour is blackifh-brown. It is taftelefs, and adheres to the tongue like clay. It is infoluble in water, alcohol, ether, oils, lime-water, and acetic acid. It diffolves in potafh and ammonia by the affiftance of heat, and is again precipitated by acids. Sulphuric acid diffolves it, and becomes black. Muriatic acid alfo forms an imperfect folution. Nitric acid diffolves it, and changes its colour to reddifh-brown. When diftilled it yields water, brown oil, and carbonate of ammonia. The refiduum confifts almoft entirely of charcoal.

Eye, col. 2, l. 6, *r.* In the year 1811, the town and parifh confifted of 326 houfes, and 1893 inhabitants.

EYEMOUTH. Add—By the return of 1811, the parifh contained 115 houfes, and 962 inhabitants.

EYNSHAM, or Ensham, l. *ult.*—In 1811, the number of inhabitants was 1418, and of houfes 246.

F.

FABER, Jacobus Stapulensis. See Fevre.

FAHRENHEIT, l. 2, Hamburgh or Dantzic.

FAIRFAX, l. 3, *r.* 13,111 inhabitants, of whom 5942 were ſlaves in 1810. At the cloſe, add—Alſo, a town of Maine, in Kennebeck, containing 924 inhabitants.

FAIRFIELD, l. 4, *r.* 17; l. 5, *r.* 40,950; l. 6, *r.* 83; l. 17, *r.* 4125; l. 23, add—divided into 15 townſhips, containing 11,361 inhabitants. For Kennebeck *r.* Somerſet; l. 26, *r.* 1348; l. 30, *r.* 1618; l. 36, add—containing 2279 perſons; l. 43, *r.* 1973; l. 47, add—It contains 11,857 inhabitants, of whom 4034 are ſlaves.—Alſo, a townſhip in Crawford county, in Pennſylvania, having 421 inhabitants.—Alſo, a townſhip of Butler county, in Ohio, having 1414 inhabitants.—Alſo, a townſhip of Columbiana county, in Ohio, having 852 perſons.—Alſo, a townſhip of Highland county, in Ohio, having 1167 inhabitants.

Fairfield, *New.* See New, &c.

FAIRFORD. In 1811, the pariſh contained 295 houſes, and 1444 perſons; *viz.* 688 males, and 756 females.

FAIRHAVEN, l. 6, *r.* 645; add—Alſo, a ſmall townſhip of Maine, in Somerſet county, having 116 inhabitants.

FAIRLEE. At the cloſe, add—983.

FAIR VIEW, a townſhip of York county, in Pennſylvania, containing 1298 perſons.

FALHERZ. See Mineralogy, *Addenda.*

FALLOWFIELD, *Eaſt* and *Weſt.* Two townſhips in Cheſter county, in Pennſylvania; the former containing 991, and the latter 1157 perſons.—Alſo, a townſhip of Waſhington county, in Pennſylvania, having 1934 inhabitants.—Alſo, a townſhip of Crawford county, in Pennſylvania, having 551 perſons.

FALLS, a townſhip of Bucks county, in Pennſylvania, having 1649 perſons.—Alſo, a townſhip of Muſkingum county, in Ohio, having 951 inhabitants.

FALMOUTH. At the cloſe, add—By the return of 1811, the town of Falmouth contains 465 houſes, and 3933 inhabitants.

Falmouth, in America, l. 3, *r.* 4105. Col. 2, l. 11, *r.* 2237.

FANNET, a townſhip of Franklin county, in Pennſylvania, containing 1398 inhabitants.

FAQUIER, l. 3 and 4, *r.* 22,689 inhabitants, of whom 10,361 are ſlaves.

FAREHAM. In 1811, the pariſh contained 596 houſes, and 3325 perſons; *viz.* 1592 males, and 1733 females.

FARM, col. 5, l. 9 from the bottom, for *Led-farms r. Lea-farms.*

FARMER, Richard, col. 2, l. 12, for which he exchanged for *r.* for which he exchanged.

FARMINGTON, l. 7, *r.* 1639. After Boſton, add—Alſo, a town of Strafford county, in New Hampſhire, having 1272 inhabitants; l. 15, *r.* 2748.

FARRIERY, denotes the buſineſs or practice of a farrier, which, in its more limited ſenſe, pertains to the ſhoeing of horſes, (ſee Shoeing,) and the various circumſtances attending it; but in its more extenſive ſenſe, and as it is often uſed and underſtood, it comprehends the whole veterinary art, as it relates to the management of animals in general, including the knowledge and proper treatment of their diſeaſes. See each diſeaſe under its appropriate term.

FARRINGDON. In 1811, the pariſh of Great Farringdon contained 327 houſes, and 1843 perſons; *viz.* 900 males, and 943 females: 175 families being employed in agriculture, and 131 in trade, manufactures, and handicraft.

FARSETIA, in *Botany*, a genus originally founded by Dr. Antonio Turra, of Vicenza, in a quarto diſſertation, (publiſhed at Venice in 1765,) reduced by Linnæus to *Cheiranthus*, is reſtored by Mr. Brown, in Ait. Hort. Kew. v. 4. 96. It commemorates Philip Farſeti, a noble Venetian, celebrated for his botanical erudition. Mr. Brown gives the following

Eſſ. Ch. Pouch elliptic-oblong, ſeſſile, compreſſed, with flattiſh valves. Cotyledons accumbent. Seeds ſeveral; either bordered, or ſome of the filaments are toothed. Six ſpecies are defined in *Hort. Kew.*

FARSISTAN, l. 6, after province, add—is divided into the Germaſeer and Sirhud, or the warm and cold climates. The former is that tract which extends from the ſea to the latitude of Kazeroon, and runs parallel with the gulf, from the banks of the Tab to the confines of Lariſtan. The Sirhud, denoting boundary, and metaphorically applied to a cold region, comprehends moſt of the mountainous part of Fars, extending from the latitude of Kazeroon to that of the town of Yezdekhaſt, ſituated on the bed of a former river, which ſeparates this province from Irak. Fars, &c.

FAVART, l. 23, for *retrouſſé* r. *retrouſſé.*

FAVERSHAM, col. 3, l. 30, *r.* in 1811—672—3872.

FAWN, l. 3, *r.* 1402.

FAYETTE, l. 4, *r.* 9; l. 6, 24,714 inhabitants, of whom 58, in 1810, were ſlaves.—Alſo, a county of Ohio, containing 1854 inhabitants. Col. 2, l. 4, *r.* 8039; l. 5, *r.* 2905; l. 9, *r.* 804; add—Alſo, a townſhip of Alleghany county, in Pennſylvania, containing 2016 inhabitants.

FAYSTON, a town of Chillendon county, in Vermont, having 149 inhabitants.

FEARING, a town of Ohio, in Waſhington county, having 454 inhabitants.

FEATHERS, *dry-pulled, ſcalded, dele* the reference to Bed.

FELAHI, or Dorak, one of the principal towns of Chusistan or Kuzistan, in Persia, founded by Sheikh Soliman when the ancient Dorak, one of the eight cities of Susiana, was abandoned. It is situated in low marshy ground, on the banks of two of the branches of the Jerahi, surrounded with mud walls, sixteen feet thick and two miles in circumference, flanked at intervals with towers. The inhabitants, amounting to 8000, live chiefly without the walls in the suburbs. This town is celebrated for the manufacture of the abba, or Arabian cloak, which is transported in great numbers all over Persia and Arabia.

FELSPAR. See Felspar and Mineralogy, *Addenda*.

FELUGIA, or Anbar, in *Geography*, a town in the pachalic of Bagdad, which, under the appellation of Perisabur, is ranked, in the history of the campaigns of Julian, as the head city in Assyria. The city was reduced to ashes, and on its ruins a palace was erected by Soliman the Great, pacha of Bagdad. Pilgrims going to Kerbela generally cross the river at this spot, on a bridge of boats.

FENCE, col. 2, l. 20, *dele* low. Col. 3, *dele* hedge, last word, and the comma in l. 2. Col. 21, l. 4, for thus above *r.* thus formed above; l. 34, 35, for under the plough *r.* into grass.

FEREDUN, in *Geography*, a small district of Irak, in Persia, behind the S.W. ridge of the mountains of Khonfar, peopled with Georgians and Armenians, brought hither by Abbas the Great. The former, amounting to 1000 families, are Mahometans, who never intermarry with either Persians or Armenians. The capital of the district is Puashish.

FERGUSON, a township of Centre county, in Pennsylvania, having 1066 inhabitants.

FERMANAGH, l. 2, *r.* 1954.

FERMENTATION, Vinous, in *Chemistry*. The recent observations of chemists enable us to state with greater precision the changes which sugar undergoes during its conversion into alcohol, than could be done when this article was written for the Cyclopædia.

Sugar is composed, according to Dr. Prout's analysis, of

Hydrogen - - -	6.66
Carbon - - -	40.00
Oxygen - - -	53.33
	= 100.

which correspond with 1 atom of each element.

Alcohol, according to Dr. Thomson, is a compound of about

Hydrogen - -	13.04
Carbon - - -	52.16
Oxygen - -	34.80
	100.

which correspond with 3 atoms of hydrogen, 2 atoms of carbon, and 1 atom of oxygen; and carbonic acid gas is composed of

Carbon - - -	27.27
Oxygen - - -	72.72
	= 100.

or of 1 atom of carbon and 2 atoms of oxygen.

Hence, if we suppose (for the sake of round numbers) 3 atoms of sugar to be decomposed during the process of fermentation, they will be converted into 1 atom of alcohol and 1 atom of carbonic acid; for

	Hydrogen.	Carbon.	Oxygen.
1 atom alcohol consists of	3 atoms	+ 2 atoms	+ 1 atom
1 atom carbonic acid gas of		1 atom	+ 2 atoms
which make together	3	+ 3	+ 3

or three atoms of sugar.

Now this determination very nearly coincides with the actual experiments of Lavoisier, and the more recent determination of Thenard, respecting the proportional quantities of these two products obtained by the fermentation of sugar. Thus 100 parts of sugar (as deduced by Dr. Thomson from Thenard's experiments) were converted into

Alcohol - - -	57.44
Carbonic acid - -	42.56
	100.

Whereas the proportions, according to the above calculations, ought to have been

Alcohol - - -	51.12
Carbonic acid - -	48.88
	100.

A coincidence as near as could have been expected, considering the very difficult nature of the experiment.

With respect to the *modus operandi* of ferments, we have nothing to add, but that the subject still remains a mystery. See Wine, and Yeast.

FERRABAD, in *Geography*, a town of Mazanderan, in Persia, situated at the mouth of a river, 30 miles E. of the village of Meshed Sir, which carries on a small trade in rice, salt-fish, and pottery.

FERRISBURGH, a town of Addison county, in Vermont, having 1647 persons.

FERROCYANIC Acid, in *Chemistry*. See Cyanogen.

FERRURETTED *Chyazic Acid*. See Cyanogen.

FEVRE, or Fabri, James de. Add—See Faber, Jacobus Stapulensis.

FEZA, in *Geography*, a small town of Persia, 18 furfungs from the capital of Fars or Farsistan, having about 4000 inhabitants, on the banks of a small stream, which is totally absorbed in the irrigation of the gardens and fields adjoining the town.

FIBRIN, *Chemical Properties of*. See Blood.

FIBROLITE. See Mineralogy, *Addenda*.

FICARIA. Refer to Ranunculus *Ficaria*.

FIDUCIAL Edge. See Plain *Table*, and Circle.

Fiducial *Line*. See Line.

FIELD-Scabins, *r.* Field-*Scabious*.

Field-*Fortification*, col. 6, l. 23 from the bottom, for at top *r.* at top and at bottom.

FIFESHIRE, col. 3, l. 32, *r.* 1811; l. 33, *r.* 17,518—101,272.

FIGURE, in *Heraldry*, col. 2, l. 12, for *passive r. passant*.

FIGURED, in *Manufactures*, last line but three, for the turning *r.* then turning.

FINLEY, in *Geography*, a town of Washington county, in Pennsylvania, having 1636 persons.

FIRMAN. Add—In general, it denotes an order or mandate, and is applied to any imperial decree, or royal grant or charter.

FIRMNESS, l. *ult.* after gold, add—or platina. Col. 2, l. 7, for motion *r.* notion.

FIROZEABAD, an ancient city of Fars, in Persia, founded by Artaxerxes Babegon, which became the capital of Firoze Shah, the grandson of Nashirvan. Its ruins occupy a large space in a plain about 17 miles in length, and half as wide. Here are the remains of Attash Kudda, or fire-temple of Firoze Shah.

FIRUZABAD. See the preceding article.

FISCARD, l. *ult. r.* 250. Col. 2, l. 2, *r.* 1811—391—1572; l. 14, *dele* lately and received; l. 15, for Fridays *r.* Thursdays; l. 22, *dele* having been recently assisted by the erection of a pier; l. 28, for about fifty *r.* several; l. 29, *r.* from 30 to 100 or more tons burthen; l. 40 and 41, *r.* at a distance near St. David's is a vast, &c.

FISCHERA, in *Botany*, so named by professor Sprengel, in honour of his pupil Mr. Ferdinand Fischer, now curator of the Razoumoffsky garden, near Moscow.—Spreng. Prodr. Umbell. 27. (Azorella; Labill. Nov. Holl. v. 1. 73.)—Class and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Eff. Ch. Fruit ovate, solid, corrugated and muricated. General and partial involucrum of many leaves. Perianth of five deciduous teeth. Petals ovate, undivided.

1. F. *lanceolata*. Lanceolate Fischera. Spr. n. 3. (Azorella lanceolata; Labill. 74. t. 99.)—Leaves linear-lanceolate, keeled.—Native of Port Jackson, New South Wales, *Dr. White;* of Lewin's land, *Labillardiere*. *Stem* shrubby, twelve or eighteen inches high, with roughish branches. *Leaves* scattered, numerous, spreading, entire, smooth, an inch and a half long; tapering at the base. *Umbels* terminal, stalked, compound, many-flowered.

2. F. *ovata*. Ovate Fischera. Spr. n. 4. (Azorella ovata; Labill. 74. t. 100. Trachymene ovata; Spr. Umb. 8.)—Leaves elliptic-ovate, triple-ribbed.—From the same countries. Differs from the foregoing chiefly in the broader shorter figure of the *leaves*, and the more evident combination of their ribs. We suspect Labillardiere has confounded a more lanceolate variety of the present with his real *lanceolata*.

3. F. *linearis*. Linear Fischera. (F. linearifolia; Spr. n. 2. Azorella linearifolia; Cavan. Ic. v. 5. 57. t. 485.)—Leaves linear-awlshaped.—Native of Port Jackson. *Dr. White*. Like the two former in habit, but the small, narrow, heath-like *leaves* seem to distinguish it, if the foliage of this genus can at all be trusted for specific characters.

We conceive the compound *umbels*, totally different *habit*, more oblong less flattened *fruit*, and other characters above indicated, must keep these plants generically distinct, both from the original *Azorella*, (see Bolax,) and from Mr. Rudge's Trachymene, hereafter described, though the learned Sprengel now refers them to the latter. His *T. compressa* (Azorella compressa; Labill. t. 101.) appears not well to accord with either, in character or habit. The *fruit* is broader than long, tumid and reticulated, not rough. *Umbels* compound.

FISH, *Anatomy of*, *dele* all the references to plates.

Under *Kidnies and Urinary Bladder*, col. 2, l. 46, *dele* the paragraph beginning—It may, and ending, place.—Under *Brain*, col. 4, l. 12, *dele* after usual, and begin—immediately, &c. Under *Integuments*, col. 2, l. 10 from bottom, *r.* renewed. Col. 5, *dele* after skin, l. 3 and l. 4. Under *Organs of Vision*, col. 5, l. 15, for the refragibility of the humour *r.* it. Under *Electric Organs*, col. 2, l. 15 from bottom, for hexagonal *r.* pentagonal; l. 14, for one or two *r.* two or three.

FISHERY, Pilchard, col. 2, l. 24, for 35,0000 *r.* 35,000.

Fishery, *Salmon*, col. 3, l. 7, for strikes *r.* strike; l. 8 from bottom, for killed *r.* kitted.

Fishery, *Whale*, col. 2, l. 29, after split, add—wood. Col. 4, l. 17 from bottom, for forty-two *r.* sixty-six; l. 5 for six harpooners *r.* one or two harpooners.

FITZBURG, in *Geography*, a town of Worcester county, in Massachusetts, having 1566 persons.

FITZJAMES, l. 8 from bottom, for France *r.* Spain.

FITZWILLIAM, l. 5, *r.* 1301.

FIXED Bodies, l. 20, after silver, add—and platina.

FLAG, col. 2, l. 7, since Nov. 1805, the red flag at the main-mast has been the first in rank after the union flag.

FLAHERTI, l. 7 from bottom, after Scottish *r.* and Irish; l. 5, *dele* Irish.

FLAME, col. 8, l. *ult.* add—This experiment should be cautiously performed.

FLAX-Dressing, col. 2, l. 2. See a "Notice of a Method of Bleaching Flax in Half an Hour, without the Use of Acids or Alkalies." Anderson's Bee, vol. x. p. 335. Col. 2, l. 25, *r.* distance.

Flax *Foot-Brake*, l. 29, *r.* higher than the distance.

Flax-*Seed Jelly*, col. 2, l. 32, for oils *r.* soils.

FLEMING, l. 5, *r.* 8947, and 549.

FLEMINGIA, in *Botany*, so called in just commemoration of Dr. John Fleming, the able president of the East India company's medical board at Bengal.—Roxb. Corom. v. 3. 44. Ait. Hort. Kew. v. 4. 349.—Class and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Eff. Ch. Calyx five-cleft. Standard striated. Legume sessile, oval, turgid, of two valves, with two spherical seeds.

Six species are defined in Hort. Kew. all from the East Indies. *F. stricta*, Roxb. t. 248, and *semialata*, t. 249, have handsome axillary spikes of crimson *flowers: strobilifera*, which is *Hedysarum strobiliferum* of Linnæus, has simple *leaves;* all the rest are ternate.

FLETCHER, l. 2, *r.* 382.

FLEUR-de-Lis. See Flower-de-Luce.

Fleur *de Lis*, *r.* Fleur *de Lissé*.

FLINDERSIA, in *Botany*, in honour of capt. Flinders; commander of the botanical expedition in which Mr. Brown was employed.—Br. Bot. of Terr. Austr. 63.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Cedreleæ*, Br.

Eff. Ch. Calyx five-cleft, inferior. Petals five. Nectary cup-shaped, bearing the stamens, with five intermediate barren filaments, opposite to the petals. Capsule woody, of five valves, and five cells, with as many loose partitions. Seeds winged, two in each cell.

1. F. *australis*. Br. t. 1.—A tree found on the east coast of New Holland, lat. 23°. *Leaves* ternate or pinnate, entire. *Panicles* cymose, downy. *Capsules* muricated.

Arbor radulifera, Rumph. Amb. v. 3. 201. t. 129, is supposed to belong to this genus.

FLOAT-STONE. See Mineralogy, *Addenda*.

FLOOR, in *Building*, col. 2, l. 37, for heading points *r.* heading joints.

FLORAL Games, l. 10, add—It is said that Clementina-Isaura, countess of Thoulouse, published an edict that assembled all the poets of France with artificial crowns, dressed with flowers, &c. Warton's Hist. of Poetry, vol. i. p. 467.

FLORIDA, col. 2, l. 1, after Appalachicola, add—and Pearl river, N. by 31° N. lat. and S. by Bayou Iberville, Amite river, and lakes Maurepas and Pontchartrain; extending over 4850 square miles of surface. Soon after the incorporation of this part of W. Florida into the state of Louisiana, it was divided into the four parishes of Baton Rouge, New Feliciana, St. Helena, and St. Tammany. The rivers are, the Mississippi, the Comite, Amite, Ticksah, Tangipoo,

Tangipoo, Chisuneté, Bogue Chito, and Pearl. The Comite rises in Wilkinson county, in the Mississippi territory, and, after a course of forty miles, falls into the Amite. The Amite rises in the same territory in Amite county, and having joined the Iberville, falls into lake Maurepas, after a course of 100 miles. The Tickfah rises in the same territory, and after entering W. Florida, becomes much augmented, and pursuing a south course of fifty miles falls into lake Maurepas. The Tangipoo rises in the same territory, and running nearly S. 70 miles, falls into lake Pontchartrain. The Chisuneté rises in W. Florida, and pursuing a course of about 60 miles, enters into lake Pontchartrain. The thriving town of Madisonville lies on its banks. The Bogue Chito has its source in the Mississippi territory, and after a S.E. by S. course, enters the PEARL *River*; which see.

FLORIDA, a town of Berkshire county, in Massachusetts, containing 392 inhabitants.

FLORIN, col. 2, l. 19, after divisions, add—A florin is a silver coin in Holland, Flanders, and Germany, called also "Guilder," or "Gulden." Accounts are kept in Holland in gilders or florins of 20 stivers, each subdivided into 16 pfenings. A rix-dollar is worth $2\frac{1}{2}$ stivers, and a pound Flemish is equal to 6 gilders; hence, the rix-dollar being = 3*s.* 4*d.* Flemish, the gilder is = 3*s.* 4*d.* Flemish. A gold gilder, with which accounts are kept in the corn-trade, is worth 28 stivers. Among the coins are stamped gold gilders at 28 stivers, unstamped do. at 26 stivers. A gold gilder of 28 stivers must weigh 407 Dutch asses, or 301 English grains. In Germany, they have gold florins, or guldens, which are chiefly current in the countries on the banks of the Rhine, passing generally for 2 rix-dollars current, and they are to contain $18\frac{1}{2}$ carats of fine gold, $3\frac{2}{3}$ carats of fine silver, and $1\frac{5}{6}$ carats of copper. The Hanoverian gold florins contain $18\frac{3}{4}$ carats of gold, $3\frac{2}{3}$ carats of silver, and $1\frac{1}{3}$ carat of copper. The gold florin is a gold coin in Hanover, and other parts of Germany; but the gold gilder in Holland is a silver coin. See TABLE *of Coins* under COIN and EXCHANGE.

FLOYD, l. 4, *r.* 3453 and 113.

FLUATES, in *Chemistry*. See FLUORIC *Acid*.

FLUGEL-MAN, in *Military Language*, a well-drilled intelligent soldier, advanced in front of the line to give the time in the manual and platoon exercises. The term *flugel* is derived from the German, and signifies a *wing*; the man having been originally posted in the front of the right wing.

FLUIDS, *Animal, Chemical Properties of*. The blood is the general source of all other animal fluids, most of which, more or less, resemble it in their properties. The operation by which other fluids are formed from the blood is termed *secretion*. See BLOOD and SECRETION.

Berzelius divides secreted fluids into two classes; namely, the *secretions* properly so called, or the fluids intended to fulfil some ulterior purpose in the animal economy; and the *excretions*, which are directly discharged from the body. The fluids of the former class, according to this distinguished chemist, are all *alkaline*; of the latter, all *acid*. The excretions are, the urine, the perspirable fluid, and the milk; all the other fluids appear to belong to the former class. The alkaline secreted fluids may be divided into two very distinct species. The former of these contains the same quantity of water as the blood, so that the change induced by the nervous influence seems to be confined to that of altering the chemical form of the albuminous materials, without affecting their relative proportions to the water and other substances dissolved in the blood. The bile, spermatic fluid, &c. are of this kind. The latter species consists of fluids, in which the influence of the nervous system has separated a large portion of the albuminous matter, and left the remaining liquid proportionally more watery. The saliva, the humours of the eye, and the effused serum of membranes, are of this species; and in these, the quantities of salts, and in general also of alkali, are the same as in the blood.

The influence of the chemical agent of secretion is therefore, according to Berzelius, chiefly spent upon the albuminous materials of the blood, which seem to be the source of every substance that peculiarly characterises, and is the principal constituent of each secretion, and which is *sui generis*. All the other parts of the secretion seem to be rather accidental, and to be found there only, because they were contained in the blood out of which the secretion was formed.

The *excretions* are of a more compound nature. They all contain a free acid, which is the *lactic*, and in the urine this is mixed with the uric acid. Urine seems to contain only a single peculiar characteristic matter, but milk has as many as three, namely, butter, curd, and sugar of milk. The perspired fluid appears to have no peculiar matter, but to be a mere watery liquid with hardly a vestige of the albumen of the blood, and in short to be the same as the other excreted fluids would be if deprived of their peculiar matter.

An account of most of the animal fluids will be found under their proper heads. The following is a tabular view of the analyses of what have been termed *albuminous* fluids, many of which have been omitted.

Name of Fluid.	Albumen.	Incoagulable matter, &c.	Salts.	Water.
Fluid from spina bifida	·5	·7	1.0	97·8
Liquor pericardii	5·5	2.0	·5	92.0
Ditto	3·0	1.0	1.0	95.0
Fluid from hydrocephalus	.12	.28	1.0	98.6
Fluid from hydrocele	6.85	1.1	0.8	91.25
Liquor amnii	.16	.1	1.4	98.34
Fluid from ascites	4.25	1.0	1.0	93.75
Fluid from a blister	6.0	.14	1.0	92.86
Ditto *	18.	—	4.0	78.0
Albumen ovi	12.0	2.7	0.3	85.00

The above are the results of Dr. Bostock's experiments, with the exception of the fluid from a blister marked *, which is taken from Margueron.

With respect to the nature of the *incoagulable matter* and *salts*, they are the same as those constantly found in the serum of the blood; we refer our readers therefore to what we have said on this subject under the article BLOOD.

FLUOBORIC ACID, in *Chemistry*. See FLUORIC *Acid*.

FLUORIC ACID. Since this article was written for the Cyclopædia, many important additions have been made to our knowledge respecting fluoric acid, which deserve to be mentioned here.

Pure fluoric acid, according to Gay Lussac and Thenard, may be obtained by distilling together in lead vessels a mixture of one part of white fluor spar in a state of powder, and two parts of concentrated sulphuric acid. The lead receivers must be kept as cool as possible by a mixture of common salt and snow or ice.

Fluoric acid thus obtained is, at 32°, a colourless liquid, like water. It remains a fluid between —4° and 60°. Its boiling point has not been determined, but it is low. When exposed to the air it smokes violently, giving out a smell similar to that of muriatic acid, but much stronger. It is very speedily dissipated in the open air, and can only be preserved in metallic vessels. Those best adapted for the purpose are made of pure silver, with air-tight silver stoppers. This acid, according to Davy's experiments, when as concentrated as possible,

poſſible, contains no water. In this ſtate, its ſpecific gravity is 1.0609. When united to a certain portion of water, its ſpecific gravity becomes as high as 1.250. When a drop is let fall into water, a hiſſing noiſe is heard, ſimilar to that occaſioned by a hot iron. When a few drops of water are let fall into fluoric acid, it enters into ebullition. A large proportion of water may be added without deſtroying its fuming property. Care muſt be taken not to breathe the fumes of this acid, as they are very deleterious. When a drop of it falls upon the ſkin, it acts as a powerful corroſive, and occaſions a ſore which does not ſoon heal.

Reſpecting the nature of this acid, the opinion of the older chemiſts, and even of Gay Luſſac and Thenard, was, that it is compoſed of an unknown baſis and oxygen. M. Ampere, however, ſtarted the notion that it is analogous to muriatic acid, or a compound of hydrogen, and a ſupporter of combuſtion, to which the name of *fluorine* has been given; and this opinion has been ſince ſupported by Sir H. Davy, and though its truth has not been abſolutely demonſtrated, yet upon the whole perhaps it is the moſt probable. On this ſuppoſition, fluoric acid is a compound of one atom fluorine, and one atom hydrogen. See SIMPLE *Bodies*.

Fluoric acid combines with all the baſes forming *fluates*.

Fluate of Ammonia.—This ſalt may be formed by ſaturating pure fluoric acid with ammonia. It is neutral when firſt formed, but becomes acid when evaporated. It does not cryſtallize, but when heated, flies off in thick white vapours.

Fluate of Potaſh.—This ſalt may be formed in the ſame manner as the laſt. It has a very ſharp taſte, cryſtallizes with difficulty, is very deliqueſcent, and of courſe ſoluble in water. When heated, it undergoes firſt the aqueous, and afterwards the igneous fuſion. Sulphuric acid decompoſes it, driving off fluoric acid in vapour.

Fluate of Soda.—This ſalt may be formed as above. It has much leſs taſte than fluate of potaſh. It is not altered by expoſure to the air, and is rather more ſoluble in hot than in cold water. On cooling, therefore, it ſeparates in ſmall cryſtals, or more frequently in the form of a ſolid and tranſparent cruſt on the ſurface of the water.

Fluate of Lime.—This ſalt exiſts abundantly native. It is called FLUOR SPAR (which ſee), and is the ſubſtance from which this acid is always obtained. It is compoſed, according to Davy's analyſis, of

Fluorine	-	20.	-	100.
Calcium	-	26.25	-	131.25

Fluate of Barytes.—This ſalt is taſteleſs, inſoluble in water, but ſoluble in exceſs of fluoric acid, and likewiſe in nitric and muriatic acid. It is compoſed of

Fluorine	-	20.	-	100.
Barium	-	87.5	-	437.5

Fluate of Strontian.—This ſalt poſſeſſes the ſame properties as fluate of barytes.

Fluate of Magneſia.—This is a taſteleſs powder, inſoluble in water, and ſcarcely ſoluble in acids.

Fluate of Yttria, *Fluate of Alumina*, and *Fluate of Zirconia*, are likewiſe white inſoluble powders. The

Fluate of Glucina is ſoluble in hot water, and precipitates in ſmall cryſtals as the water cools.

It is extremely probable, as Dr. Thomſon remarks, that the above ſalts are in reality *fluorides*, or compounds of *fluorine*, with the metallic baſes of the earths.

The metallic fluates are not upon the whole an intereſting claſs of bodies. The *fluates of iron*, *mangane ſe*, *zinc*, and *tin*, are white inſoluble powders. The *fluate of cobalt* is of a red colour. The *fluate of lead* exiſts in the form of brilliant plates. The *fluate of copper*, of ſmall blue-coloured ſoluble cryſtals. The *fluate of mercury* of ſmall lamellar yellow cryſtals. The *fluate of ſilver* is very ſoluble in water, and does not cryſtallize. It cannot be formed by the direct union of fluoric acid and ſilver, but it is formed when fluate of mercury is made to act upon ſilver.

Fluoboric Acid.—Fluorine has the property of combining with boron, and forming an acid which has received the above appellation. It may be formed by mixing together in a retort one part of finely pounded fuſed boracic acid, and two parts of fluor ſpar in powder, and twelve parts of ſulphuric acid. The heat of a lamp is then to be applied, and the acid comes over in the form of a gas, which muſt be received over mercury. For this proceſs we are indebted to Dr. John Davy, but the acid itſelf was firſt diſcovered by Gay Luſſac and Thenard in 1808.

Fluoboric acid thus obtained is colourleſs, and poſſeſſes the mechanical properties of common air. Its ſmell is ſimilar to that of muriatic acid, and its taſte is exceedingly acid. It inſtantly gives a red colour to vegetable blues. Its ſpecific gravity, as determined by Dr. Davy, is 2.3709. Water abſorbs about 700 times its bulk of this gas, and becomes ſlightly viſcid, like ſulphuric acid, and like it requires a high temperature to make it boil. It alſo charrs animal and vegetable ſubſtances, and is capable of forming an *ether* when diſtilled with alcohol. It combines with the different baſes, and forms a claſs of ſalts called *fluoborates*, which have been little examined. On the ſuppoſition that it is a compound of *fluorine* and *boron*, which ſeems to be the moſt probable opinion, its compoſition will be

Fluorine	-	20.	-	100.	-	228.57
Boron	-	8.75	-	43.75	-	100.

Fluoſilicic Acid.—Fluorine has alſo the property of combining with *ſilicon*, and forming a powerful acid. This compound was firſt diſcovered by Scheele, but it is to Dr. J. Davy that we are principally indebted for the correct account of its properties. It may be formed by putting a mixture of equal parts of pounded fluor ſpar and glaſs into a retort, and pouring over the mixture ſulphuric acid ſufficient to convert the whole into a paſte. Heat is then to be applied, and the acid ſpeedily comes over in the form of a gas, and may be collected over mercury. Fluoſilicic acid gas is colourleſs, and poſſeſſes the mechanical properties of common air. Its ſmell reſembles that of muriatic acid. It ſmokes when allowed to eſcape into the atmoſphere. It inſtantly reddens vegetable blues. Its ſpecific gravity, according to Dr. Davy, is 3.5735. Water abſorbs about 263 times its bulk of it, but at the ſame time it is partly decompoſed, and ſilica is depoſited. When paſſed through liquid ammonia, the whole of the ſilicon is depoſited in the form of ſilica: this enabled Dr. Davy to effect its analyſis, the reſult of which appears to ſhew that it is a compound of one atom ſilicon and one atom fluorine.

The *fluoſilicates* have not been much examined. The *fluoſilicate* of lime exiſts abundantly native, and has not hitherto been diſtinguiſhed from fluor ſpar. It may, however, be eaſily recogniſed by heating it in metallic veſſels with ſulphuric acid, when it yields fluoſilicic acid gas, while fluor ſpar does not.

FLUORINE. See FLUORIC *Acid*.

FLUOSILICIC ACID, FLUOSILICATES. See FLUORIC *Acid*.

FLUTE TRAVERSIERE. See TRAVERSIERE.

FLUVANNA, l. 5, *r.* 4775, of whom 2142 are ſlaves.

FOAL-BIRTH. See AGE *of the Horſe*, and HORSE.

FOLKINGHAM, or FALKINGHAM, l. 5 and 6, *r.* 106 houſes, and 659 inhabitants.

 FOLKSTONE,

FOLKSTONE, l. 15. In 1811 this town contained 765 houfes, and 3697 perfons; *viz.* 1673 males, and 2024 females: 23 families being employed in agriculture, and 157 in trade and manufactures.

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FOOD, col. 9, l. 1, for animal *r.* gramineal or gramineous.

FORCE, col. 28, *dele* the paragraph from l. 3 to l. 6. Col. 38, under Force, l. 1, infert—.6; l. 2, .69. Under Continuation, l. 4, 1′; under *Day's work*, l. 4, *r.* 2. Col. 39, under *Performance of Men by Machines*,—Continuance, l. 1, 145″; l. 2, 2′. Col. 41, under *Work of Mules*, l. 1, *r.* Cazand; l. 23, *r.* 72 horfes, and burns a chaldron, &c.

FORCEPS, col. 2, l. 30 from bottom, *r.* Rueff; l. 19, *r.* Mauriceau Pratique.

FORDINGBRIDGE, l. 11, *r.* 1811; l. 12, *r.* 445—2259; l. 13, *r.* 281.

FORDOUN. In 1811 this parifh contained 513 houfes, and 2535 perfons; *viz.* 1197 males, and 1338 females.

FORDYCE, a parifh of Bamff county, in Scotland, containing 641 houfes, and 2767 inhabitants.

FORFAR, l. 21, *r.* 1811; l. 22, *r.* 759—5652.

FORFARSHIRE. Add—By the return of 1811, this county had 16,135 houfes, occupied by 107,264 perfons; 48,151 being males, and 59,113 females: 4980 families employed in agriculture, and 13,616 in trade and manufactures.

FORFICULA, col. 2, under Auricularia, add—The popular dread in which this infect is held, from an apprehenfion of its entering the cavity of the ear, and piercing the tympanum, is now generally confidered as an ancient and vulgar error.

FORMIC Acid, in *Chemiftry.* The diftinct nature of this acid appears now to be generally admitted by chemifts. In its fenfible properties, it approaches the acetic acid. But Suerfen has fhewn, that it has the property of neutralizing much lefs of alkaline bodies than acetic acid. Gehlen alfo has fhewn, that the formiates of foda and copper, differ altogether from the acetates of the fame bafes. Berzelius has lately analyfed this acid with his ufual precifion: according to him, it is compofed of

Hydrogen	2.84	which nearly correfpond with	1 atom hydrogen.
Carbon	32.40		2 atoms carbon.
Oxygen -	64.76		3 atoms oxygen.

Hence it appears to refemble oxalic acid clofely in its compofition.

FORRES, l. 4, after Moray, add—or Elgin; l. 12, *r.* 1811—672; l. 13, *r.* 2925, and 295 families, &c.

FORTH, col. 2, l. 7, for Camburkenneth, *r.* Cambufkenneth.

FORTIFICATION, col. 7, l. 4 from bottom, for Four *r.* Your.

Fortification, *Profile of a*, l. 14, for 3 toifes 18 feet *r.* 3 toifes or 18 feet.

FOSSE, col. 2, l. 44, for thus *r.* then.

FOSSIL Copal. See Mineralogy, *Addenda.*

FOSTER, l. 2, *r.* 2613.

FOTHERINGHAY, l. 28, *r.* 1587. Col. 2, l. 15 and 16, *r.* and the whole parifh contains 55 houfes, and 313 perfons.

FOUNDERY—*The manner of cafting bells*, col. 2, l. 6, for $\frac{2}{15}$ *r.* $\frac{12}{15}$.

FOURTH, col. 2, l. 3, *r.* Fourth, *Great Sharp.*

Fourth, *Greateft Sharp*, *r. Great.*

FOWEY, col. 2, l. 20 from bottom, *r.* 1811; after houfes—in the borough and parifh was 227, containing 1319 inhabitants.

FOWLER, a townfhip of Trumbull county, in Ohio, having 224 inhabitants.

FOX, George, col. 2, l. 25, *r.* led people.

FOXBOROUGH, l. 4, *r.* 870.

FOYERS, l. 9, *r.* moffy; l. 11, *r.* breach; l. 15, *r.* aftonifhed rents; l. 16, *r.* ceafelefs; l. 17, after wide, infert—a comma.

FRAGUIER, col. 2, l. 31, after farther on."

FRAISED Rails, l. 12, for rails *r.* pofts; and in l. 11, for rails *r.* fraifes.

FRAMINGHAM, l. 3, *r.* 1670.

FRANCE, col. 26, l. 16, add—See *French* Revolution. Col. 33, l. 5, for fheds *r.* ftuds.

FRANCESTOWN, l. 5, *r.* 1810 and 1451.

FRANCO, col. 5, l. 11 from bottom. N. B. the tails fhould not have been black.

FRANCONIA, in America, l. 4, *r.* 358. Add—Alfo, a townfhip of Montgomery county, in Pennfylvania, having 656 inhabitants.

FRANKFORT, l. 3, *r.* 1493; l. 4, for village *r.* borough. Col. 2, l. 1, infert—1233 inhabitants; add—Alfo, a town of Suffex, in New Jerfey, containing 1637 inhabitants.—Alfo, a town of Cumberland county, in Pennfylvania, having 807 inhabitants.

FRANKLIN. Add—The following is an authentic copy of Franklin's epitaph, tranfcribed from his correfpondence, in his own hand-writing. "The body of B. Franklin, like the cover of an old book, its contents torn out, and ftripped of its lettering and gilding, lies here, food for worms. But the work fhall not be wholly loft; for it will, as he believed, appear once more in a new and more *perfect* (elegant) copy, *corrected* and *amended* (revifed and corrected, P. C.) by the Author. He was born, Jan. 6, (Jan. 17, original,) 1706. Died 17——

Franklin, in *Geography*, l. 3, *r.* 19; l. 4, *r.* 16,427; l. 14, *r.* 23,083; l. 16, containing 159 inhabitants; l. 20, *r.* containing 5730 inhabitants, of whom 709 are flaves; l. 24, *r.* 6914; l. 25, *r.* 1794; l. 26, after Franklin, containing 1099 perfons, of whom 407 are flaves; l. 27, *r.* 10,166—5330; l. 41, *r.* 10,815—1656; l. 45, *r.* 1398; l. 54, *r.* with 1542 inhabitants; l. 55, for three *r.* five; after York county, having 706 inhabitants, in Huntingdon county, with 571, in Franklin county, with 1781, in Fayette county, with 1623, in Greene county, with 1943 inhabitants; l. 58, *r.* 1161; l. *ult.* after Ohio, add—with eight townfhips, and 3484 inhabitants.—Alfo, a townfhip of Portage county, in Ohio, having 230 inhabitants.—Alfo, a townfhip of Rofs county, in Ohio, having 725 perfons.—Alfo, a townfhip of Ohio, in Scioto county, having 217 perfons.—Alfo, a townfhip of Warren county, in Ohio, having 2302 perfons.—Alfo, a county of New York, containing 2617 inhabitants.—Alfo, a town of Somerfet county, in New Jerfey, containing 2539 inhabitants.—Alfo, a town of Bergen county, in New Jerfey, having 2839 inhabitants.—Alfo, a county of the territory of Miffiffippi, containing 2016 inhabitants, of whom 735 are flaves.

FRANKS, l. 3, *r.* 1114.

FREDERICK I. col. 2, l. 14, after Urban III. infert—claim of.

Frederick, l. 12, *r.* 34,437; l. 13, *r.* 3671. Col. 2, l. 2, *r.* 22,574 inhabitants, of whom 6117 are flaves.

Frederick, a townfhip of Montgomery county, in Pennfylvania, having 828 inhabitants.

FREEHOLD, l. 4, *r.* 1810—4784; l. 7, *r.* 1810—3843.

FREEMAN,

FREEMAN, a townſhip of Maine, in Somerſet county, having 237 inhabitants.

FREEPORT, l. 5, *r.* 2184.

FREEZING, l. 15, *r.* $\frac{1}{40}$.

FRENCH *Creek*, in *Geography*, a townſhip of Mercer county, in Pennſylvania, having 183 inhabitants.

FRICTION, *Calculation of the Quantity of*, col. 2, l. 22, *r.* a third part of its own weight.

FRIENDSHIP, in *Geography*, a town of Maine, in the county of Lincoln, having 480 inhabitants.

FRODSHAM, l. 11 from the bottom, *r.* 1811; l. 10, *r.* 262, and 1344.

FROME, l. 17 from the bottom, *r.* 1811—1722; l. 16, *r.* 9493, and *dele* But this eſtimate is glaringly defective.

FRUIT-FLIES, col. 2, l. 14, *r.* theſe ſnails.

FRUIT-*Stones*, l. 5 from the bottom, for cuts *r.* coats; l. *ult.* *r.* theſe ſeeds, &c. were carried off.

FRYBURGH, l. 2, for York *r.* Oxford; l. 4, *r.* 1004.

FUNGI, *Chemical Properties of the.* Braconnot has lately detected three diſtinct new principles in this claſs of plants. Two of theſe are acids, one of which he has denominated *boletic acid*, the other *fungic acid;* the third is a principle neither acid nor alkaline, to which he has given the name of *fungin.* We ſhall briefly deſcribe here the leading properties of each of theſe principles.

Boletic Acid.—This was obtained from the juice of the *boletus pſeudo-ignarius.* Its colour is white; it is not altered by expoſure to the air, and its cryſtals are irregular four-ſided priſms. Its taſte is ſimilar to that of tartar. It is ſoluble in 180 times its weight of water at a temperature of 68°, and in 45 times its weight of alcohol. The aqueous ſolution reddens vegetable blues. It combines with the different baſes forming *boletates*, which have been but little examined. The boletate of ammonia cryſtallizes in flat four-ſided priſms, and is ſoluble in 26 times its weight of water at 68°. The *boletate* of *potaſh* is very ſoluble in water, and cryſtallizes with difficulty. The *boletate* of *lime* cryſtallizes in flat four-ſided priſms, and is ſoluble in about 110 times its weight of water at $72\frac{1}{2}$°. No one hitherto appears to have repeated the experiments of Braconnot on this acid.

Fungic Acid.—This was extracted from the *boletus juglandis*, and other fungi. This acid is colourleſs, does not cryſtallize, has a very ſour taſte, and when evaporated to dryneſs, deliqueſces on expoſure to the air. The *fungates* of *potaſh* and *ſoda* do not cryſtallize, are very ſoluble in water, but not in alcohol. The *fungate* of *ammonia* cryſtallizes in regular ſix-ſided priſms. The *fungate* of *lime* is not altered by expoſure to the air, and is ſoluble in about 18 times its weight of water at 73°.

Fungin.—This ſubſtance approaches woody fibre in its properties, but ſeems to be ſufficiently diſtinguiſhed from it by various characters, particularly by conſtituting a nouriſhing article of food, and by being leſs ſoluble in alkaline leys.

FUNGUS *of the Antrum*, l. 13, for he *r.* ſhe.

FURCRÆA, in *Botany*, after M. Fourcroy, the great chemiſt.—Venten. in Uſt. Annal. v. 19. 54. Ait. Hort. Kew. v. 2. 302.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Coronariæ*, Linn. *Bromeliæ*, Juſſ.

Eſſ. Ch. Petals ſix, ſuperior, ſpreading. Filaments ſhorter than the corolla, obovate in their lower part. Style triangular, thickened at the baſe.

F. *gigantea*, De C. Pl. graſs. (Agave fœtida, *Linn.*) and F. *tuberoſa*, (A. tuberoſa, Willd. Sp. Pl. v. 2. 194.) are the only ſpecies.

FURIES, col. 3, l. 22, *r.* thoſe ſerpents.

FURR, in *Heraldry*, the 4th paragraph, *r.* Furrs either conſiſt of one colour (which is white, but cannot be uſed in arms ſingly), or more than one; and theſe either two, or more than two.

FURRINGS, in *Architecture.* Add—Joiſts are furred, by which operation the uneven joiſts of an old floor are levelled for the reception of the flooring boards.

FURZE, col. 4, l. 18, for 1*l.* 16*s.* *r.* 3*l.* 12*s.*, the furze being cut only every other year.

FURZE-*Mill*, col. 2, l. 20, for melted cake *r.* melted coke.

FUSION, col. 2, l. 20 from the bottom, *dele* all and except gold.

G.

G, l. 21, after *ſing*, &c. add—It has been aſſerted, however, by an ingenious correſpondent, that he finds this ſo far from the fact, that G hard is eaſily ſounded with any of the vowels, either before or after it, whilſt the tongue is probably kept at the bottom of the mouth; nor does he believe that the preſſure here deſcribed is at any time neceſſary for the pronunciation of this letter. It does indeed take place in two of the three examples here given, *viz. gate, go,* and *geld;* but it is for the formation of the letters *t* and *l.* This preſſure takes place alſo with the G ſoft.

GADUS. Obſ. Some ſpecies, *viz.* Molva, Albidus, Tau, Lota, Muſtela, Tricirratus, and Cimbrius, all *bearded*, are arranged in the ſame diviſion, the character of which is *without beards.*

GAGE, in *Carpentry*, l. 9, for a ſtaff *r.* the ſtick; for to ſtrike *r.* or ſtrike; l. 10, for ſtaff *r.* ſtuff; l. 11, for it *r.* the tooth.

GAINSBOROUGH, l. 9 from bottom, for quadrangular *r.* quadrangle.

GALANGAL, l. 3, add—See ALPINIA, *Addenda.*

GALAPAGOS, col. 1, l. 5 from bottom, for 68° *r.* 86° or 89°; *dele* the paragraph.

GALARDIA, in *Botany*, Lamarck Dict. v. 2. 590. Illuſtr.

Illuſtr. t. 708. Schreb. Gen. 573. Willd. Sp. Pl. v. 3. 2245. Ait. Hort. Kew. v. 5. 129. Purſh 572. Juſſ. 189. (Virgilia; L'Herit. Monogr.)—Claſs and order, *Syngeneſia Polyg.-fruſtranea*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Recept. hemiſpherical, chaffy. Seed-down of many chaffy ſcales. Calyx imbricated, many-leaved, flat. Radiant florets deeply three-cleft.

1. G. *bicolor*. Two-coloured Galardia. Willd. n. 1. Ait. n. 1. Purſh n. 1. (Virgilia helioides; L'Herit. t. 1, 2. Sm. Exot. Bot. v. 1. 71. t. 37.)—Stem branched. Leaves lanceolate. Scales of the ſeed-down awned, entire.—Found in dry ſandy ſoil, from Canada to Florida. Annual. *Flowers* handſome, orange, variegated with red and purple.

We have already announced this genus under the VIRGILIA now eſtabliſhed. There are two more ſpecies, *G. fimbriata* and *ariſtata*, from N. America.

GALEOPITHECUS, COLUGO, in *Zoology*, a genus of the order Primates, the characters of which are, that it has no front teeth in the upper jaw; that thoſe in the lower are ſix, ſhort, broad, diſtant, and pectinated; that the canine teeth are very ſhort, triangular, broad, ſharp, and ſerrated; that the grinders are four, truncated and muricated with conical protuberances; and that it has a flying-ſkin ſurrounding the body, limbs, and tail. For the deſcription of this genus with appropriate figures, naturaliſts are indebted to Dr. Pallas; and it may be found in the Tranſactions of the Academy of Peterſburgh for the year 1780. The galeopithecus volans, or flying colugo, is the lemur volans of the Linnæan ſyſtem, and the flying macuaco of Pennant's quadrupeds. It is a native of the Molucca and Philippine iſlands, where it feeds principally on fruits, and almoſt conſtantly reſides on trees. It has two young ones, which are ſaid to adhere to its breaſts by the mouth and claws. Its whole length is about three feet, and of the ſame breadth when expanded; the tail is ſlender, and about a ſpan long. Its expanſile ſkin, which enables it to fly, is continued on each ſide from the neck to the fore-feet; thence to the hind-feet, and again to the tip of the tail. It is covered with fur, like the body of the animal; the upper ſide of which is generally of a deep aſh colour: the back, in animals that are full grown, is croſſed tranſverſely with blackiſh lines, having towards the edges a tinge of yellow; and the whole underſide, both of the body and membrane, is of a yellowiſh colour. The head is long, the mouth ſmall, and the tongue fleſhy, broad, rounded, attenuated on the edges, and ciliated with papillæ, and alſo ſlightly beſet with papillæ on its ſurface. The legs are clothed with a ſoft yellow down, and on each foot are five toes, united by a common membrane, and terminating in very ſharp crooked claws. The animal is called by the Indians caguang, colugo, and gigua. It is a gregarious animal, flies chiefly in the evening, and its body is ſaid to be about the ſize of a cat. M. Geoffroy ſays there are two varieties; *viz.* one of the colour uſually deſcribed; the other of a fine cinereous or ferruginous colour, vivid on the back and paler beneath, and without any variegations. It is ſuggeſted, that theſe may be merely ſexual differences. Dr. Shaw has availed himſelf of Pallas's deſcription and figure in the firſt vol. of his Zoology, to which we refer.

GALINSOGEA, in *Botany*, after the ſuperintendant of the Madrid garden. "Ruiz and Pav. Prodr. 110." Ait. Hort. Kew. v. 5. 122.—Claſs and order, *Syngeneſia Polyg.-ſuperflua*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Recept. chaffy. Seed-down of many chaffy ſcales. Calyx imbricated.

1. G. *parviflora*, Cavan. Ic. t. 281.

2. G. *trilobata*, ib. t. 282.—Both natives of South America.

GALIUM, col. 2, l. 34, for dried *r.* freſh.

GALLATIN, l. 2, *r.* 3159, and 664.

GALLIC ACID, in *Chemiſtry*. This acid has been recently analyſed by Berzelius. He found it compoſed of

Hydrogen - - -	5.90
Carbon - - -	56.64
Oxygen - - -	38.36
	100.00

According to which analyſis, the conſtitution of gallic acid is as follows:

3 atoms hydrogen - -	3.75
6 atoms carbon - -	45.
3 atoms oxygen - -	30.
and the weight of its atom will be	78.75

Gallic acid has been found in the following plants, in the different proportions ſtated.

Elm - -	7	Sallow - -	8
Oak, cut in winter	8	Mountain-aſh -	8
Horſe-cheſnut -	6	Poplar - -	8
Beech - -	7	Hazel - -	9
Willow (boughs)	8	Aſh - -	10
Elder - -	4	Spaniſh cheſnut -	10
Plum-tree -	8	Smooth oak -	10
Willow (trunk)	9	Oak, cut in ſpring	10
Sycamore -	6	Huntingdon or Leiceſter willow	10
Birch - -	4		
Cherry-tree -	8	Sumach - -	14

GALLICIA, NEW, l. 5, *r.* Zacatecas.

GALLIPOLIS, a townſhip of Ohio, in the county of Gallia, containing 448 inhabitants.

GALVANISM, col. 3, l. 25, after inch, inſert—a part.

GALVANISM, *Medical*. See VOLTAISM, and particularly ELECTRICITY, *Medical*.

GALVANOMETER, an apparatus conſtructed by Mr. Pepys, by an alteration in Bennet's electrometer, adapted for meaſuring very minute quantities of electricity, and which perhaps could not be rendered ſenſible by any other means. This apparatus conſiſts of a glaſs cylinder, covered with a lid, which is compoſed of two circular plates of braſs, attached to a cork that fits into the cylinder. To the lid is fixed a thin ſlip of ſilver, the end of which hangs down in the body of the cylinder, and has a pair of gold leaves attached to it; and the whole is ſo contrived as to be capable of being moved nearer to, or farther from, the pieces of zinc which ſtart up from the bottom of the cylinder. The pieces of zinc are ſo contrived, that the parts of them which project upwards from the bottom of the cylinder may be fixed at different diſtances from each other by means of a ſlide and ſcrew. See a deſcription and figure of this inſtrument in Boſtock's "Hiſtory of Galvaniſm," 8vo. 1819.

GAMING, col. 3, l. 30, *r.* 8 Geo. I.

GARDENING, l. 17, *r.* Loudon.

GARDINER. Add—containing 1029 perſons.

GARDNER, l. 4, *r.* 815.

GARGLE, a diſeaſe of horned cattle, which conſiſts of an external hard ſwelling in the dew-lap, which afterwards ſpreads to the breaſt and throat. For the cure, profuſe bleeding is recommended; and then an opening is to be made in the dew-lap at the ſeat of the ſwelling, into which are

are introduced the leaves of bear's-foot pounded; the opening is then sewn with two or three stiches, and thus will be produced a running which will cure the disease; or a common rowel will answer the purpose.

GARRARD. Add—It contains 8926 inhabitants, of whom, in 1810, 2000 were slaves.

GARSTANG, l. 3, *r.* 178 and 790.

GARUGA, in *Botany*, a very barbarous Indian name.—Roxb. Corom. v. 3. 5. Ait. Hort. Kew. v. 3. 37.—Class and order, *Decandria Monogynia*. Nat. Ord. *Meliæ*, Juss.

Eff. Ch. Calyx bell-shaped, five-cleft, bearing the stamens and the five equal petals. Stigma five-lobed. Drupa with several nuts.

1. G. *pinnata*. Roxb. t. 208.—A *tree* found on the mountains of India. *Leaflets* serrated. *Flowers* panicled, yellow. *Fruit* austere, used for pickling. *Wood* soft.

GAS, col. 2, l. 25, after atmosphere, add—will be found under Air, Atmosphere, &c.; *dele* stated under the head of Pneumatics.

Gas, in *Chemistry*. Great revolutions have taken place in the chemistry of the *gases* since this article was written for the Cyclopædia. Not only have their number been increased, but the laws of their combination, expansion by heat, &c. have been further investigated, and in many instances found very different from those stated under the above article. Several of these particulars have been already given under the article Atomic *Theory*, a few others remain to be mentioned here. The following table from Dr. Thomson includes the gases at present known.

1. *Simple gases.* Oxygen, chlorine, iodine vapour, hydrogen, azote, sulphur.
2. *Compound gases.*
   - *a.* Simple gases combined. Hydriodic acid, protoxyd of chlorine, protoxyd of azote. Muriatic acid, deutoxyd of azote, steam, ammonia.
   - *b* Oxygen and a solid base. Sulphuric acid, sulphureous acid. Carbonic oxyd, carbonic acid.
   - *c.* Hydrogen and a solid base. Cyanogen, sulphuretted hydrogen, olefiant gas, carburetted hydrogen, hydroguret of phosphorus, bihydroguret of phosphorus.
   - *d.* Fluorine, chlorine, and cyanogen with a base. Fluoboric acid, chlorocyanic acid, hydrocyanic acid, chlorocarbonic acid.
   - *e.* Two solid bases. Sulphuret of carbon.
   - *f.* Triple or quadruple compounds. Hydriodic ether, chloric ether, sulphuric ether, muriatic ether, alcohol, oil of turpentine.

Combination of Gases with one another.—The important law first observed by Gay Lussac respecting the combination of gaseous bodies, and alluded to in our original article, is now, we believe, nearly universally admitted. This law is, that gaseous bodies always unite with reference to their volumes; that is to say, that either equal volumes of different gases combine together, or one volume of the one, with two, three, or more of the other, and not with any intermediate proportion; and further, that when a gaseous result is obtained by such union, the volume of this is either equal to the united volumes of the two gases, or to half, one-fourth, or some other submultiple of the original volumes.

The combinations of gases with one another have been arranged by Dr. Thomson under the following heads.

1. Gases that unite by mere mixture, such are: Oxygen with nitrous gas, forming nitrous or nitric acid. Ammonia with vapour, forming liquid ammonia—with muriatic acid, forming muriate of ammonia—with fluoboric acid, forming fluoborate of ammonia—with fluosilicic acid, forming fluosilicate of ammonia—with carbonic acid, forming carbonate of ammonia—with sulphureous acid, forming sulphite of ammonia—with sulphuretted hydrogen, forming hydrosulphuret of ammonia.
2. Gases that may be mixed without any striking combination, though they are capable of uniting in certain circumstances, such are: Oxygen with hydrogen, forming water—with carbonic oxyd, forming carbonic acid—with azote, forming nitric acid—with chlorine, forming chloric acid—with sulphureous acid, forming sulphuric acid—with nitrous oxyd, forming nitric acid. Hydrogen with chlorine, forming muriatic acid—with iodine, forming hydriodic acid—with cyanogen, forming hydrocyanic acid. Chlorine with carbonic oxyd, forming chloro-carbonic acid.
3. Gases which mutually decompose each other when mixed together, such are: Oxygen with phosphuretted hydrogen. Chlorine with ammonia—with phosphuretted hydrogen—with carburetted hydrogen—with olefiant gas—with sulphuretted hydrogen—with nitrous gas. Sulphuretted hydrogen with nitrous gas—with sulphureous acid.
4. Gases which mix without spontaneous decomposition, but which may be made to decompose each other in particular circumstances, as on the approach of an ignited body, when electric explosions are passed through them, &c. These are more numerous then the preceding, and are as follow: Oxygen with sulphuretted hydrogen—with carburetted hydrogen—olefiant gas—vapour of ether—vapour of alcohol. Nitrous oxyd with hydrogen—with phosphuretted hydrogen—sulphuretted hydrogen—carbonic oxyd—carburetted hydrogen—olefiant gas—vapour of ether—vapour of alcohol—sulphureous acid. Nitric acid with hydrogen, and probably all the preceding combustible gases and vapours—with sulphureous acid. Nitrous gas with hydrogen—with sulphureous acid. Hydrogen with sulphureous acid—with carbonic acid. Vapour of water with carburetted hydrogen—with olefiant gas.

Combination of Gases with Liquids. Gases may be considered with reference to their combination with water and with other fluids. With respect to water, by far the most important of all fluids, gases may be divided into two classes; those that are absorbed in a small proportion, and those that are absorbed in a great. Almost all gases belong to the first class. In the following list of this class, the gases are arranged in the order of their absorption, beginning with the least absorbable: azotic gas—hydrogen gas—arsenical hydrogen—carburetted hydrogen—carbonic oxyd—phosphuretted hydrogen—oxygen gas—nitrous gas—olefiant gas—nitrous oxyd—carbonic acid—sulphuretted hydrogen.

The following laws seem to be pretty well established respecting the absorption of gases by water.

1. When the pressure, temperature, and purity of the water, are the same, water absorbs a determinate quantity of every individual gas.

2. Water of the same temperature always takes up the *same bulk* of each gas, whatever be its denſity.

3. The proportion of any gas abſorbed by water depends greatly upon the nature of the gaſeous reſidue.

4. The proportion of gaſes abſorbed by water is conſiderably influenced by the temperature.

All the very abſorbable gaſes belong to the claſs of ſupporters, acids, or alkalies. The following is a liſt of ſuch of them as have been hitherto examined, arranged in the order of their abſorbability. Chlorine, cyanogen, ſulphureous acid, fluoſilicic acid, muriatic acid, fluoboric acid, ammoniacal gas.

When water is ſaturated with the above gaſes its bulk is augmented. Thus one cubic inch of water ſaturated with

	Cubic Inches.
Chlorine becomes - -	1.002 +
Sulphureous acid - -	1.040
Muriatic acid - -	1.500
Ammoniacal gas - -	1.666

With reſpect to the abſorption of gaſes by other fluids leſs is known. It appears, however, that in general alcohol and oils abſorb a much greater proportion of gaſes than water.

Our limits will not permit us to enter upon this ſubject ſo much as its importance demands, we muſt therefore content ourſelves with preſenting our readers with the following table of the proportions of different gaſes abſorbed by water, according to the beſt experiments.

Table I. — Gaſes combining with Water in ſmall Proportion.

At a temperature of 60°, 100 Meaſures of Water	abſorb, according to		
	Henry.	Dalton.	Sauſſure.
Sulphuretted hydrogen	106	100	253
Carbonic acid - -	108	100	106
Nitrous oxyd - -	86	100	76
Olefiant gas - -	—	12.5	15.3
Nitrous gas - -	5	3.7	—
Oxygen gas - -	3.7	3.7	6.5
Phoſphuretted hydrogen	2.14	—	—
Carburetted hydrogen	1.4	3.7	5.7
Azotic gas - -	1.53	1.56	4.1
Hydrogen - -	1.61	1.56	4.6
Carbonic oxyd - -	2.01	1.56	6.2

Table II. — Gaſes combining with Water in large Proportion.

One Meaſure of pure Water	abſorbs, according to				
	Dalton.	Sauſſure.	Thomſon.	Gay Luſſac.	Davy.
Chlorine -	2	—	—	—	—
Cyanogen -	—	—	—	$4\frac{1}{2}$	—
Sulphureous acid	—	43.78	33	—	—
Fluoſilicic acid	—	363 +	—	—	—
Muriatic acid	—	—	516	—	—
Fluoboric acid	—	—	—	—	700
Ammoniacal gas	—	—	780	—	—

Combination of Gaſes with Solids.—The ſimple gaſes are only four, oxygen, chlorine, hydrogen, and azote. Oxygen combines with all the ſimple bodies known. Chlorine, with by far the greater number. Hydrogen, with carbon, phoſphorus, and ſulphur, and ſome of the metals. Azote, as far as is known, with carbon only.

Of the union of compound gaſes with ſolids little is known, and ſuch combinations are very rare.

With reſpect to *the weights of the atoms*, *ſpecific gravities*, *compoſition*, *&c.* of the different gaſeous bodies that have been well aſcertained, they will be found in the titles appended to the article Atomic *Theory*, to which, therefore, we refer our readers. Other particulars, ſuch as their chemical properties, &c. will be found under their reſpective heads.

Expanſion of Gaſes by Heat. (See Expansion.)—To what has been there advanced we may add, that it is now conſidered as eſtabliſhed, that all elaſtic fluids expand equally and uniformly by heat; and the following table gives us nearly the bulk of a given quantity of air at all temperatures, from 32° to 212°, by the aid of which the expanſion of gaſes for all other temperatures may be eaſily aſcertained.

Temp.	Bulk.	Temp.	Bulk.	Temp.	Bulk.
32°	1000000	59°	1056249	86°	1112499
33	1002083	60	1058333	87	1114583
34	1004166	61	1060416	88	1116666
35	1006249	62	1062499	89	1118749
36	1008333	63	1064583	90	1120833
37	1010416	64	1066666	91	1122916
38	1012499	65	1068749	92	1124999
39	1014583	66	1070833	93	1127083
40	1016666	67	1072916	94	1129166
41	1018749	68	1074999	95	1131249
42	1020833	69	1077083	96	1133333
43	1022916	70	1079166	97	1135416
44	1024759	71	1081249	98	1137499
45	1027083	72	1083333	99	1139583
46	1029166	73	1085416	100	1141666
47	1031249	74	1087499	110	1162499
48	1033333	75	1089383	120	1183333
49	1035416	76	1091666	130	1204166
50	1037499	77	1093749	140	1224999
51	1039583	78	1095833	150	1245833
52	1041666	79	1097916	160	1266666
53	1043749	80	1099999	170	1287499
54	1045833	81	1102083	180	1308333
55	1047916	82	1104166	190	1329166
56	1049999	83	1106249	200	1349999
57	1052083	84	1108333	210	1370833
58	1054166	85	1110416	212	1374999

GASOMETER. See Laboratory.

GASTRIC Juice. See Digestion.

GASTROLOBIUM, in *Botany*, Br. in Ait. Hort. Kew. v. 3. 16, a papilionaceous genus, with ten ſeparate ſtamens, named from the tumid, or *bellying legume.* We have had no opportunity of examining it.

GATES, l. 4, *r.* 5965 and 2790.

GATTON, l. 3, for 112 *r.* 99.

GAZANIA, in *Botany*, perhaps from γαζα, *riches*, in alluſion to the ſplendour of the flowers.—Gærtn. v. 2. 451. t. 173. Br. in Ait. Hort. Kew. v. 5. 140. Lam. Illuſtr. t. 702.—Claſs and order, *Syngeneſia Polyg.-fruſtranea.* Nat. Ord. *Compoſitæ.*

Eſſ. Ch. Receptacle without ſcales. Seeds very hairy. Seed-down of chaffy hairs. Calyx of one leaf.

G. rigens, (Gorteria rigens; Linn. Sp. Pl. 1284. Curt. Mag. t. 90.); *G. pavonia*, (Gorteria pavonia; Andr. Repoſ. t. 523.); and *G. ſubulata*, Br. are the only ſpecies; all natives of the Cape of Good Hope. See Gorteria.

GEAUGA, in *Geography*, a county of Ohio, containing 8 towns, and 2917 inhabitants.

GEDDINGTON, l. *ult.* This pariſh conſiſts of 141 houſes—*r.* 651.

GELATINE, in *Chemiſtry*. This animal principle has been lately analyſed by Gay Luſſac and Thenard, according to whom it conſiſts of

Hydrogen -	7.914
Carbon - -	47.881
Oxygen - -	27.207
Azote - -	16.998
	100.

Gelatine does not exiſt in the blood, nor in any known animal fluid ready formed, but appears to be produced by the action of boiling. See Blood.

GELONIUM, in *Botany*, Roxb. in Willd. Sp. Pl. v. 4. 831. Ait. Hort. Kew. v. 5. 406.—Claſs and order, *Dioecia Icoſandria*. Nat. Ord......

Eſſ. Ch. Male, Calyx of five leaves. Cor. none. Stam. twelve or more. Female, Cal. and Cor. like the male. Styles none. Stigmas three, jagged. Capſule of three cells, three valves, with three ſeeds.

1. G. *bifarium*. Willd. n. 1. Ait. n. 1.—Leaves elliptical, rather acute.

2. G. *lanceolatum*. Willd. n. 2.—Leaves oblong-lanceolate, obtuſe.—Eaſt Indian trees, with alternate *leaves*, the tubular *ſtipula* of a *Ficus*, and axillary *flowers*.

Vol. XVI.

GENESEE, l. 5, *r.* 1810, and 12,588 perſons.

GENEVA, New, a townſhip of Fayette county, in Pennſylvania, having 232 inhabitants.

GENEVIEVE, l. 7, add—and diſtrict. In 1810, it contained 4620 inhabitants, of whom 988 were ſlaves. This town is famous for its lead-mines, which occupy an extent of country, commencing about 30 miles W. of the Miſſiſſippi, and extending W. and N.W. It was the diſcovery of theſe lead-mines that gave riſe to the famous Miſſiſſippi ſcheme, projected by Law in 1719, which ruined hundreds of families in France, as they were then ſuppoſed to be a ſilver-mine: and though the bubble burſt immediately, yet Du Pratz, who wrote thirty-nine years afterwards, perſiſted in the error, and ſpeaks of a ſilver-mine on the Marameg in his account of Louiſiana. The Marameg is now called the Marrawal, on a branch of which, called the Negro-Fork, the mines of St. Genevieve are ſituated. Theſe mines have been worked ſince about the year 1725, and they belong to a number of proprietors moſtly held by grants from the Spaniſh governors, formerly reſiding about St. Louis. Bradbury's Travels, &c.

GEODORUM, in *Botany*, from γεα, *the earth*, and δωρον, *a gift*, becauſe, contrary to the nature of moſt of its neareſt allies, this genus grows on the ground, not on trees.—Jackſon in Andr. Repoſ. 626. Br. in Ait. Hort. Kew. v. 5. 207.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Lip hooded, ſeſſile, not articulated with the column. Calyx and petals uniform, ſpreading, rather aſcending. Anther a terminal deciduous lid. Maſſes of pollen two, each with a poſterior lobe.

G. purpureum, (Limodorum nutans; Roxb. Corom. v. 1. t. 40. Malaxis nutans; Willd. Sp. Pl. v. 4. 93.); *G. citrinum*; Andr. t. 626; and *G. dilatatum*, (L. recurvum; Roxb. t. 39.); all Eaſt Indian plants, are the only deſcribed ſpecies. Their *leaves* are elliptical, many-ribbed; *cluſters* or *ſpikes* on radical ſtalks, pendulous, handſome.

GEOLOGY. (See Geology.) At the period when that article was written, geology as a ſcience had ſcarcely excited any conſiderable degree of intereſt in this country; and thoſe who were deſirous of acquiring a knowledge of the ſtructure of the earth directed their attention more to the expoſition of it which Werner had given, than to the actual ſtate of the earth itſelf. Indeed ſuch was the ſuppoſed infallibility of the German profeſſor, and the attachment to theory, that for ſeveral years the reſearches of geologiſts were undertaken chiefly to make facts coincide with preconceived ſyſtems; but in proportion as our knowledge of facts extended, the difficulty of reconciling them with received theories became more and more apparent, and ſome of the warmeſt advocates of theſe theories began to perceive the neceſſity of deſcribing phenomena as they really exiſt, without any further attempt to bind nature in the fetters of an artificial ſyſtem.

The ſyſtem of Werner (ſee Systems *of Geology*) preſumes, that all the principal beds of rock, or rock formations, are univerſal, or, in other words, that each of theſe rocks encircles the whole earth, like the rind of an onion, and that they are placed over each other in a regular ſucceſſion, which is the ſame in every part of the globe. This regular ſucceſſion is a neceſſary conſequence of another poſition in the Wernerian ſyſtem, that the materials of all the different beds of rock were held in ſolution by water, which covered the globe univerſally, and at ſucceſſive periods depoſited its contents as the waters retired; hence the *retiring of the waters* is an important part of the ſyſtem, and is often referred to in ſome of the articles relating to geology, in the early volumes of the Cyclopædia. Had the ſtrata been depoſited from water covering the whole globe, their order of ſucceſſion in each country would doubtleſs be the ſame; but this is not confirmed by experience. The ſtrata are not univerſal formations, but are of limited extent, and vary much in different parts of the world, and even in different diſtricts of the ſame country. See Rocks and Strata.

Some of the univerſal formations of Werner occur only in one place, as the topaz rock. The abſurdity of deſcribing this rock among ſuch univerſal formations is ſo manifeſtly abſurd, that it is aſtoniſhing ſuch an arrangement could ever have been admitted. To explain the difference in the order of ſucceſſion obſerved in different countries, the German geologiſt had recourſe to what were called *ſubordinate formations*. Theſe are ſtrata of different kinds, which, it was admitted, might occur in other rocks without any regular order of ſucceſſion.

By this admiſſion, all variations from the order of ſucceſſion of rock formations laid down by Werner were ſuppoſed to be accounted for. The ſtrata which were not arranged in the Wernerian order were called *ſubordinate formations*; by ſuch a verbal device, geologiſts thought they could reconcile to their theory all oppoſing facts. Mr. Bakewell, in his Introduction to Geology, was, we believe, the firſt perſon in this country who ventured publicly to ſtate that many of the ſuppoſed univerſal formations of Werner were local, but of greater or leſs extent, and that the ſame regular order of ſucceſſion was not univerſal in different countries.

This, we believe, is now admitted by all thofe who have had the moft extenfive range of obfervation.

"The fecondary ftrata are local formations, and fome of the upper ftrata were evidently formed in detached lakes or inland feas. A ftill more comprehenfive view will prove that even all the ftratified rocks above the red fand-ftone and alpine lime-ftone are alfo local formations, which had their origin in detached hollows or feas of great extent, but which were limited to certain portions of the globe. The obfervation of travellers in different parts of the world incontestibly prove that thefe formations are local. I am even inclined to confider the red fand-ftone and alpine lime-ftone as local formations, but of greater extent than any of the ftrata above them. If this view of the fubject were admitted, geologifts would be relieved from the great difficulties under which the fcience labours at prefent, and it would go far to eftablifh a fimple and perfpicuous fyftem, which will at once account both for the fimilarity and diverfity of rock formations in various parts of the world. If the mountains were once much higher than at prefent, it muft be admitted, that before the formation of the fecondary ftrata the valleys and hollows were deeper in a far greater proportion, becaufe to the height of the furrounding mountains we muft add the whole depth of the fecondary ftrata which were then wanting. By whatever procefs the fecondary ftrata were formed, the exiftence of organic remains in them inconteftibly proves that they were depofited in fucceffion, and the regular manner in which they are fpread over each other further proves that the greater part of them were depofited in a fluid medium. As there are inconteftible proofs that water once covered nearly all the exifting continents, it follows, that when the ocean retired, or, which is the fame thing in effect, when the dry land emerged from the fea, vaft inland lakes or feas would be left at the bottom, of which the fecondary ftrata were formed. As the fea retired further, the higher grounds being left dry, thefe inland feas or lakes would become contracted, and a number of fmaller lakes would occupy the loweft cavities and depreffions, in each of which feparate depofitions of ftrata might take place. The lower ftrata would be the moft widely fpread, and the upper would conftitute detached or infulated formations of greater or lefs extent, in which there might be a great fimilarity in fome fituations, and a great diverfity in others. Now fuch is found to be the fact." (Bakewell's Introduction to Geology, 2d ed. chap. x.) This view of the fubject, we think, receives much fupport from the pofition of the mountain ranges in Europe, as may be feen in Mr. Arrowfmith's excellent map, in which the phyfical geography is diftinctly marked. Thefe ranges form the borders of numerous bafins, which muft evidently have once been the boundaries of inland feas when the ocean retired from the prefent continents.

Though great diverfity may prevail in the fucceffion of the ftrata in different parts of the world, yet there are certain rock formations that we may regard as univerfal, without afferting that they were formed at the fame epoch in very diftant countries; for it is only where organic remains of the fame fpecies occur in rocks that we may infer that their formation was cotemporaneous. In the prefent ftate of our information, we may regard granite as the loweft and moft extenfive rock, forming the foundation of all other rocks or ftrata, where we have opportunities of tracing their fucceffion. With granite we include gneifs, and alfo mica-flate, which may be regarded as granite in a fchiftofe form, but with one or other of the ingredients nearly wanting, or occurring in a very fmall proportion. (See ROCKS, GRANITE, GNEISS, and MICA-SLATE.) Clay-flate (fee SLATE) generally covers the granite, gneifs, or mica-flate, and may be regarded as a univerfal formation, or, perhaps more correctly, as a general covering of granite, gneifs, and mica-flate. The flate formation contains various anomalous beds of porphyry, compact felfpar, lime-ftone, hornblende, ferpentine, and fienite. (See PORPHYRY, FELSPAR, &c.) No obfervable regularity has yet been difcovered in the fucceffion of thefe latter rocks in different countries, and fome of them may often be obferved paffing by gradation into each other. They have generally a cryftalline ftructure in the vicinity of granite (fee ROCKS), and have not been obferved to contain organic remains.

The beds of rock which cover flate appear, many of them, to be a coarfer kind of flate, with an intermixture of quartz, or other minerals, until at laft they lofe the character of flate, and become fand-ftone. This coarfe flate, in its paffage from flate to fand-ftone, forms that kind of rock which has been denominated grey wacke or waccé. Various beds of lime-ftone occur in the coarfer flate. Of thefe, the moft confiderable in England is called the mountain lime-ftone: it has a fubcryftalline ftructure; it abounds in organic remains in many parts, and contains metalliferous veins, principally of lead and zinc. This lime-ftone lies below all the principal coal formations in England and Wales. (See STRATA.) Between this lime-ftone, and a dark grey compact lime-ftone called lias, occur the coal ftrata, with the various beds of fand-ftone and fhale. The order of fucceffion of thefe beds is not fimilar in different diftricts. The lias ftratum is the moft remarkable in England, both for its regularity and extent, and the organic remains which it contains. The fame ftratum occurs in Flanders. The ftrata above the lias were firft correctly defcribed by Mr. Farey, whofe account we have given in the article STRATA. (See STRATA.) The ftrata above the lias occur with remarkable regularity over a great part of the eaftern fide of England, defcribed by Mr. Bakewell, in his Geology, as the 'low diftrict,' extending in a waving line from Dorfetfhire to the county of Durham, and delineated in his map. Thefe ftrata confift of a fucceffion of beds of roe-ftone, or oolite, (fee ROE-STONE,) and coarfe lime-ftone, with thick beds of fand and clay, over which occurs the chalk. Thefe beds are arranged with great regularity compared with the beds that occur between the lias and the mountain lime-ftone; but the order of fucceffion and thicknefs, particularly of the oolite, is variable; for in many parts, beds of vaft thicknefs occur which are not found in other fituations, and in fome fituations the oolite is entirely wanting, and the green fand, inftead of covering it, refts immediately on the lias. See Mr. Bakewell's fection of the ftrata, *Plate* III. *fig.* 2. *Geology*.

A tabular arrangement of the ftrata of England, given by Mr. Buckland, profeffor of mineralogy at Oxford, has recently been publifhed, which we fhall prefent to our readers. At the fame time we muft obferve, that they would be greatly miftaken were they to fuppofe that the whole of thefe rock formations had ever been obferved in any one fituation in England or elfewhere, or that the ftrata preferve the thicknefs here given throughout their whole extent. There is no part of England, we believe, in which all the ftrata here enumerated could be found, were it poffible to perforate through them. The table may be regarded as an approximation to the true order of fucceffion whenever feveral of thefe formations occur in the fame diftrict, and the localities annexed will make it both interefting and ufeful. Perfons who ftudy nature in their clofets are difpofed to believe, that the thicknefs of the ftrata ſtrata between the chalk near London, and the granite of Devonſhire, is much greater than what it really is, taking it for granted that the dip of the ſtrata is always regularly to the eaſt; but this is not the caſe. A ſtratum of any conſiderable extent has waves and irregularities, by which it is generally ſpread over a large ſpace compared with its true thickneſs and ſuppoſed angle of inclination. A ſtratum not more than ſeventy yards in thickneſs may extend in the line of its dip ten miles or more, and may appear to have a conſiderable dip when obſerved in certain ſituations; and were we to calculate its thickneſs from the extent of ground which it covers, and from the dip, we might infer that it exceeded two thouſand yards or more. More accurate obſervations will convince us, that the numerous fractures or bendings of the ſtrata in the line of their dip generally ſpread them over a much wider ſpace than the angle of inclination and thickneſs would lead us to believe; and the compariſon which has been made of ſliding a number of books under each other to repreſent the ſuppoſed thickneſs of the whole ſtrata of England is utterly inapplicable to the caſe. In ſections of particular diſtricts, to repreſent the arrangement and dip of the ſtrata, it is impoſſible to delineate the irregularities and wavings of the ſtrata on a ſmall ſcale. In the ſection of England by Mr. Bakewell, (ſee *Plate* III. *fig*. 1. *Geology*,) the various ſtrata from the German ocean to Croſs-fell are repreſented riſing regularly from under each other, like a number of books in a ſlanting poſition, it being impracticable to repreſent on ſuch a ſmall ſcale all the irregularities of each ſtratum. In *Plate* III. *fig*. 2. the ſection is on a larger ſcale, and the lias ſtratum, *d*, *d*, *d*, *d*, is repreſented riſing from under the green ſand *b*, *b*, *b*, near Bridport in Dorſetſhire, and continued to the valley, M, at Axmouth; whereas had not the ſtrata been diſlocated by a great number of fractures, as repreſented in the ſection, the lias ſtratum *d* would have terminated or cropped out eaſt of the letter L, which repreſents the ſituation of the town of Lyme. The aggregate thickneſs of all the beds of lias cannot be more than two hundred yards, and the regular inclination is at leaſt one yard in twenty, which would make the loweſt bed of lias crop out about four thouſand yards, or two miles and a quarter weſt of its firſt appearance near Bridport.

Plate III. *fig*. 6. *Geology*, repreſents the waving ſtructure of the beds of ſlate, provincially called ſhillet in Devonſhire. In ſome ſituations, as near Moreton, beds of black lime-ſtone are interpoſed, and take the twiſted form of the ſlate. Now in paſſing from Exeter to Dartmoor over the fractured edges of the ſtrata, as repreſented *fig*. 6, the traveller may croſs portions of the ſame ſtratum *a*, *a*, *a*, repeatedly at a conſiderable diſtance from each other, and were he to ſuppoſe each of theſe portions to be a ſeparate ſtratum, and to calculate accordingly, the thickneſs of the whole bed of ſlate, from the red ground on the eaſt, to Dartmoor on the weſt, he would make it not leſs than ten miles; whereas in all probability it may not exceed three or four hundred yards. On a ſmaller ſcale, the ſtrata are often extended over a large ſpace by fractures in many of the coal diſtricts; by which a bed of coal is brought near the ſurface ſeveral times in the line of its dip, as repreſented *Plate* I. *fig*. 1. *Geology*, and deſcribed in the article COAL. See COAL, and VEINS, *Mineral*.

It too frequently happens, that geological obſervers meaſure nature by the ſtandard of their own limited experience in paſſing through a country, and deſcribe certain rock formations as deſtitute of organic remains, becauſe they have not found them in travelling through a diſtrict. The alpine part of Weſtmoreland and Cumberland near the lakes conſiſts of grey wacke, clay-ſlate, compact felſpar, porphyry, ſienite, trap, clinkſtone, and granite; a thin bed of ſtratified lime-ſtone is interpoſed, and runs through a ſpace of fifteen miles, containing organic remains of coralloids, though the rocks which cover this lime-ſtone, to a great depth, and the rocks on which it reſts, contain no obſervable veſtiges of organic life. Their relative poſition in the valley of Long Sleddale in Weſtmoreland, is repreſented *Plate* III. *fig*. 5. *Geology*. The ſlate which covers the lime-ſtone appears to dip at an angle of ſeventy degrees; but on more attentive examination it will be found, that what might be miſtaken for regular ſtrata are merely the ſchiſtoſe laminæ of the ſlate arranged in the direction of the cleavage, the dip of the ſlate being in reality the ſame as that of the lime-ſtone on which it reſts. Under the lime-ſtone occurs a bed of horn-ſtone, reſembling compact felſpar, but infuſible; this is eighty yards thick, and reſts on other beds of ſchiſt, as repreſented *Plate* III. *fig*. 5. *Geology*. This ſchiſt and horn-ſtone contain no organic remains, and appear to be connected with the granite, which makes its appearance in the adjacent valley at no great diſtance. The diſcovery of organic remains under rock formations of great extent which are deſtitute of them is a circumſtance of great intereſt to the geologiſt wherever it occurs, and proves the neceſſity of caution in deciding whether certain rocks were formed prior to the exiſtence of organic beings. Baſaltic or trap rocks, whoſe ſituation is not conformable with the general dip or poſition of the ſtrata, and which bear a near ſimilarity to volcanic rocks in appearance and compoſition, are deſcribed under the articles TRAP, ROWLEY-RAGG, WHINSTONE, and VEINS, *Mineral*; and alſo the article BASALT, *Addenda*; which ſee. *Plate* IV. *fig*. 2. *Geology*, repreſents the arrangement of a ſeries of columnar and amorphous beds of baſalt placed over regular ſtrata in an unconformable poſition, and interſected by veins or dykes of baſalt *b b*, in which the ſtructure is columnar; but the columns or baſaltic priſms in theſe dykes are arranged horizontally.

Fig. 4. repreſents a baſaltic rock on the coaſt of the county of Antrim, which incloſes a bed of chalk that it appears to have broken and enveloped; an effect which ſeems to require that the baſalt ſhould once have been in a melted ſtate like lava. The baſalt is repreſented in the *fig*. immediately beneath the above, as it occurs in veins in another ſituation on the ſame coaſt, cutting through the chalk, and changing it to a certain diſtance into cryſtalline lime-ſtone or marble. See TRAP and WHINSTONE.

Plate IV. *fig*. 1. *Geology*, repreſents the ſection of a regular metallic vein, which divides into two, and meets again, leaving an intervening ſpace, filled with earthy minerals called rider. The vein is repreſented as ſeparated from the rock by a thin lining of clay *c c*, which generally accompanies veins. The interſection of metallic veins in the ſame plate repreſents two veins containing the ſame kind of ore, and having the ſame dip as *a*, *a*, *a*, *a*, interſected by a vein of a different kind *b b*, which has cut through and diſplaced the former: in theſe inſtances, the vein *b b* is ſuppoſed to be of poſterior formation to the veins *a*, *a*, *a*, *a*. In the ſame *fig*. is ſhewn the diſplacement of a vein without any interſection of other veins. (See VEINS, *Metallic*.) For an account of volcanic rocks, ſee the articles VOLCANO and VOLCANIC PRODUCTS, and alſo SYSTEMS *of Geology*. For an account of the organic remains in rocks, ſee PETRIFACTIONS, ROCKS, STRATA, and FLETZ ROCKS. For an account of the organic remains of extinct ſpecies of large quadrupeds in alluvial ſoil, ſee MAMMOTH, MASTODON, MEGALONIX, and MEGATHERIUM, *Addenda*.

A Tabular Arrangement of all the Rock Formations in England.

Class I.—*Primary Rocks.*

Granitic Formation.

N° 1.

Rocks	
Granite Gneiſs Mica-ſlate Quartz-rock Marble Trap Serpentine Porphyry Sienite	Order of ſucceſſion variable; thickneſs unknown.

Class II.—*Tranſition Rocks.*

Grey Wacke Formation.

N° 2.

Rocks	
Lime-ſtone Trap Porphyry Grey wacke-ſlate Grey wacke	Order of ſucceſſion variable; thickneſs unknown.

Class III.—*Secondary Fletz Rocks.*

Structure uſually ſtratified, but the Strata much diſlocated and inclined.

No.				Localities.	Greateſt obſerved thickneſs of the ſtrata. Feet.
N° 3.	Firſt ſand-ſtone	Old red ſand-ſtone	Red, often micaceous ſand or ſand-ſtone, containing ſubordinately conglomerate pebbles from the older rocks	Van Mountain, Brecon - -	2000
			Calcareous concretions in beds and inſulated maſſes	Heavytree, Exeter	
			Porphyry and trap in beds and maſſes	Thoverton, near Exeter	
		Mountain, or metalliferous lime-ſtone	Often a compact coralline marble, alternating with beds of ſhale, chert, grit-ſtone, and trap	Derbyſhire, four beds, and three of trap	1782
				Croſs-fell, 19 of lime-ſtone, 50 of grit-ſtone, 60 of ſhale	2749
		Mill-ſtone grit	Coarſe ſiliceous ſand-ſtone, with pebbles of white quartz	Yorkſhire, and Derbyſhire -	260
		Principal coal meaſures	- - - - - -	Newcaſtle, 82 beds of grit-ſtone, ſhale, and coal, of which nine of coal are wrought	1482

Strata often lie horizontally on the Edges of the inclined Beds of the laſt Formation.

No.				Localities.	Feet.
N° 4.	Second ſand-ſtone, or grand gypſum, and ſalt formation	Magneſian lime-ſtone	Yellowiſh, fine-grained, and ſometimes of a pink hue	Knareſborough, Bolſover, and Sunderland	300
		New red ſand-ſtone, ſecond ſand-ſtone of Werner	Fine-grained, red ſiliceous, ſometimes with pebbles of quartz, and alternating with red marle, containing ſalt and gypſum	Salop, Lancaſhire, Staffordſhire, Devon, Cambridge, Plains of Cheſhire, and Worſterſhire	400

N° 5.

Nº 5.

			Localities.	Greateſt obſerved thickneſs of the ſtrata. Feet.
	Lias.—Blue ſlaty marle	Sometimes bituminous, with their beds of blue, grey, and white argillaceous lime-ſtone	Lyme, Newark, Whitby	893
		Rarely oolitic	Radſtock, near Bath, and Shepton Mallet	
		Contains chert rarely	Dunraven, Glamorganſhire	
Oolite formation. Second fletz lime-ſtone, Werner. Jura lime-ſtone, Humboldt		Sand of inferior oolite micaceous	Henton, Somerſet	
		Sometimes calcareous	Near Bath	
	Inferior baſtard oolite	Coarſe calcareous, ſlightly oolite with ſhelly fragments	Doulting and Ham-Hill, Somerſet	
	Fullers' earth	Sterile grey clay, with beds of fullers' earth	Near Bath	
	Great oolite.—Durable free-ſtone	Compoſed of oolitic concretions and ſhelly fragments, united by a calcareous cement	Farley Down, near Bath; and Ketton, Northamptonſhire	
	Stonesfield ſlate	Calcareous ſiliceous oolite, ſometimes paſſing into ſand	Coly Weſton, near Stamford	30
			Henton, near Bath	400
Middle oolite		With ſhale and thin beds of coal	Cleveland Hills, Yorkſhire	
	Foreſt marble	Compact, compoſed of fragments and ſhells	Henton, near Bath, and Long Burton, Dorſet	
	Corn braſh	Soft earthy lime-ſtone	Witch-Wood Foreſt, Oxon	
	Kelloway rock	Coarſe ſandy lime-ſtone	Campsfield, Oxon, Malmſbury, and Trowbridge	
	Oxford-foreſt, or Fen-clay	Sterile clay, with ſeptaria	Vale of Thames, upwards, Oxon; Ooſe, Bedford, downwards	200
	Calcareous grit	Siliceous ſand and lime	Near Abington, Weymouth; Filey, Yorkſhire	
	Coral rag	Looſe earthy lime-ſtone, full of coralline remains	Heddington near Oxford; Calne, Wilts; Kirkby Moorſide, Yorkſhire	
Upper oolite	Upper oolite	Oolitic concretions, and ſhelly fragments, periſhable free-ſtone	Heddington, Calne, New Malton	
	Kimmendge clay	Sometimes bituminous	Iſle of Purbeck, Dorſet	
	Portland-ſtone	Calcareo-ſiliceous free-ſtone, with beds and nodules of chert	Wiltſhire, Iſles of Purbeck and Portland, near Sandwich	
	Purbeck-beds	Strata of ſandy clay and marle, alternating with beds of coarſe ſhelly lime-ſtone	Sandwich, Iſle of Purbeck	

Nº 6.

	Iron-ſand	Contains beds of clay	Haſtings, Wealds of Suſſex	500
		——— of ochre	Summit of Shotover Hill	
		——— of fullers' earth	Woburn, Bedfordſhire	
	Tetſworth clay	Lead coloured	Vale of Ayleſbury, and White-horſe, Berkſhire	150
		Micaceous ſandy, and almoſt black	Devizes, and White-horſe, Berkſhire	
Green ſand-ſtone formation. Third ſand-ſtone of Werner	Green ſand	Sand and ſand-ſtone, with grains of green earth	Vale of Powſey	
		Alternating, and paſſing into grey ſand	Eaſtburn, Suſſex	
		Sometimes cemented by calcareous earth	Maidſtone, (Kentiſh ragg)	
		Containing beds of chert	Lyme, Dorſet	
		——— ſpecks of mora	Black Down	

Nº 7.

			Localities.	Greateſt obſerved diſtance of the ſtrata.
				Feet.
N° 7.				
Chalk formation	Chalk, marle, malm, or grey chalk	Without flint or chert, paſſing into grey ſand	Benſon, Oxon, Wiltſhire, and Lewes, Suſſex	200
		Into grey clay	Folkſtone	
	Lower chalk	With few flints ſometimes hard	Warminſter, Wilts, and Flamborough-Head, Yorkſhire	300
	Upper chalk	With many flints, paſſing into the former, ſoft enough to mark with	Saliſbury Plain, and Downs of Suſſex	300
N° 8.				
Formations above chalk	Plaſtic clay	Potters' clay, alternating with beds of ſand and gravel	Blackheath, Reading, Alum-Bay, Iſle of Wight	1131
	London clay	Lead, coloured with ſeptaria, containing calcareous matter	Iſle of Sheppey, and Bognor Rocks	550
	Foſſils ſame as in the calcaire groſiere of Paris	- - - - - - -	Hardwell-Cliff, near Chriſt-Church, Hants	
	Lower freſh-water beds	Sandy argillaceous lime-ſtone, contains freſh-water ſhells	Headen Hill, Iſle of White	63
	Upper marine beds	Clay-marle, with marine ſhells	Ditto	36
	Upper freſh-water beds	Yellow argillaceous lime-ſtone, with clay-ſand and freſh-water ſhells	Ditto	1222
N° 9.				
Trap	Fletz trap	Baſalt wacke, amygdaloid green-ſtone	Giants' Cauſeway	1040
N° 10.				
Alluvium	Deluvian detritus	Fragments of neighbouring and diſtant rocks, and with bones not mineralized	Generally in valleys	
	Fluviatile detritus	Poſt deluvian, accumulations of mud, ſand, and ſalt	Deltas of great rivers	
		Gravel, ſand, and mud	Channels of torrents and rapid currents	

In the preceding part of the preſent article we have ſtated, that this arrangement of the ſtrata may be taken as an approximation to the truth with certain limitations. It muſt be obſerved alſo, that the trap rocks, N° 9, moſt frequently occur covering or between many of the lower ſecondary rocks, preciſely ſimilar to what would have been the caſe had they been formed like volcanic rocks at different and diſtant epochs. The occurrence of baſalt in or over chalk, or any of the formations above the lias, is extremely rare. See Systems *of Geology*.

GEORGE, St., l. 15, add—The hundred of St. George's, in Delaware, contains 2880 inhabitants, of whom 314 are ſlaves.—Alſo, a town of Maine, in the county of Lincoln, having 1168 inhabitants.

George-*Town*, col. 2, l. 14, *r.* 1998; l. 29. add—Alſo, a diſtrict of North Carolina, containing 15,679 inhabitants, of whom 13,867 are ſlaves.

George, a townſhip of Fayette county, in Pennſylvania, having 2086 inhabitants.

GEORGIA, in America, l. 2, *r.* 1760.

GERMAN, l. 2, *r.* 2079.

German-*Town*, col. 2, l. 1, *r.* Maſon county, in Kentucky, containing 36, &c.; add—Alſo, a town of Ohio, in the county of Montgomery, having 1256 inhabitants.

GERRY, l. 3, *r.* 839.

GEYSERS, celebrated fountains ſituated on the ſide of a hill, about 16 miles to the N. of Skalhalt; for an account of which we refer to the article Uxahver.

GEZANGABEEN, or *Perſian Manna.* This ſubſtance has been lately aſſerted by Capt. E. Frederick, of the Bombay Eſtabliſhment, to be the production of inſects. It is obtained, according to the ſame gentleman, from a ſmall ſhrub ſomewhat reſembling the broom, on which the inſects reſide, by beating the buſhes with a ſtick. When firſt ſeparated, it is a white ſticky ſubſtance, not unlike hoar froſt, of a very rich ſweet taſte. It is purified by boiling, and then mixed up with roſe-water, flour, and piſtachio-nuts into cakes, and in this form conſtitutes the ſweetmeat, called in Perſia *gezangabeen*, and which by the Perſians is highly valued. This ſubſtance, in its original ſtate, is ſaid to liquify at a temperature of about 68°. The Perſians, however, themſelves conſider this ſubſtance as a ſpontaneous exudation from the tree on which it is found; hence the term *gezangabeen*, a term meaning literally *juice of the gez*, which is the Perſian name of the tree producing it. Thomſon's Annals of Philoſophy, vol. xiii. See Manna.

GHAUT. See Gaut.

GHONI, a large market-town of Mingrelia, carrying on ſome trade, ſituated between the Araſcha and the Hippas.

GHURZI, a well-built and populous town of Mingrelia, on the left bank of the Taghuri.

GILBERT, col. 2, l. 32, *r.* 1759.

GILDER, or Guilder. See Florin.

GILEAD, in *Geography*, a town of Maine, in the county of Oxford, having 215 inhabitants.

GILES, a county of Virginia, containing 3475 perfons, of whom 242 are flaves.

GILL, l. 4, *r.* 762.

GILLINGHAM, l. 4 and 5, *r.* 875, and 5135.

GILMANTOWN, l. 4, *r.* 4338.

GILSON, or Gilsum, l. 2, *r.* 513.

GIRARDEAU, Cape, a diftrict of Louifiana, containing 3888 inhabitants, of whom 589 are flaves.

GIRVAN, l. *penult.* and *ult.*—In 1811, the number of houfes was 533, and of inhabitants 3097, of whom 358, &c.

GISBOROUGH, or Guisborough, l. 5, *r.* 1811—435; l. 12, *r.* 2094.

GLAMORGANSHIRE, laft parag.—Glamorganfhire is divided into ten hundreds, exclufive of the two towns of Cardiff and Swanfea, and 118 parifhes, which, in 1811, contained 85,067 inhabitants; 41,365 being males, and 43,702 females: of whom 7915 families were employed in trade and manufacture, and 8217 in agriculture.

GLANCE Coal. See Mineralogy, *Addenda.*

GLASGOW, col. 2, l. 11 from the bottom, add—By the parliamentary returns of 1811, the city and burgh of Glafgow contained 17,543 houfes, and 100,749 inhabitants; 45,275 being males, and 55,474 females: of whom 17,669 families were employed in trade and manufactures, and 544 in agriculture.

GLASS, *Laws relating to,* l. 14, add—By 49 Geo. III. c. 63. the former duties upon crown glafs and broad glafs were repealed, and new duties were impofed. This act alfo contains directions and regulations with regard to the conftruction and ufe of the annealing arch or oven.

GLASTONBURY, col. 2, l. 42, *r.* 1811—448; l. 43, *r.* 2337—121.

Glastonbury, in America, l. 2, *r.* 76; l. 5, *r.* 2766.

GLOUCESTER, col. 6, l. 6, *r.* 1811; l. 7, *r.* 1509—8280; *dele* the next paragraph, and infert—3726 being males, and 4554 females; of whom 1312 families were employed in trade and manufactures, and 12 families in agriculture.

Gloucester, in America, l. 3, *r.* 5943; l. 21, *r.* 2319. Col. 2, l. 2, for Woodbury infert—Weymouth; l. 9, *r.* 19,744; l. 10, *r.* 74; l. 17, after Philadelphia, add—having 555 inhabitants.—Alfo, a town of the fame county, having 1726 inhabitants:—l. 25, *r.* 10,427 inhabitants, of whom 5798 were flaves in 1810.

Gloucester, *New*, a town of Maine, in the county of Cumberland, having 1649 inhabitants.

GLOUCESTERSHIRE, col. 2, l. 26, infert after amounted to—52,042, of inhabitants 285,514, of whom 133,192 were males, and 152,322 females; 29,988 families being employed in trade and manufactures, and 20,782 in agriculture.

GLOVER, l. 3, *r.* 378.

GLUCINA, in *Chemiftry*, the name of an earth. (See Glycine.) Dr. Thomfon, from the experiments of Berzelius and others, eftimates the weight of the atom of glucina at 22.5.

GLUCINUM, the metallic bafis of *glucina*. When glucina was heated by fir H. Davy with potaffium, that metal was converted into potafh, and grey metallic particles were obferved mixed with the potafh, which when put into water gradually evolved hydrogen gas, and were converted into glucina. This is all we know at prefent refpecting this metal.

GLUTEN, fuppofed to be the active principle of yeaft. See Yeast.

GLUTTON, *r.* Ursus *Gulo.*

GLYN, l. 4, *r.* 3417, of whom, in 1810, 2845 were flaves.

GLYPHIS, in *Botany*, from γλυφω, *to embofs*, expreffing the appearance of the warty cruft.—Achar. in Tr. of Linn. Soc. v. 12. 36. t. 2, 3.—A genus of cruftaceous Lichens, of which four fpecies are defcribed and figured, found on the barks of different tropical trees. See Chiodecton.

Eff. Ch. Warts flattifh, of the fubftance of the cruft. Receptacles fuperficial, numerous, irregular, black, folid, each with a depreffed difk, and tumid margin.

The fpecies are, *G. labyrinthica*, t. 2. f. 1. Ach. Syn. 107: *tricofa*, f. 2: *cicatricofa*, f. 3: *favulofa*, t. 3. f. 1.

GODALMING, l. 2, *r.* 672, and 3543.

GOFFSTOWN, l. 5, *r.* 2000.

GOLD. See Gold, and Mineralogy, *Addenda.*

Gold, in *Chemiftry*. A few particulars lately afcertained refpecting this metal deferve to be briefly noticed here.

Sulphur is ftated in the Cyclopædia to exert no action on gold, and this is true in ordinary cafes. But if an alkaline hydrofulphuret be dropped into a folution of gold, a black powder falls to the bottom, which is found to be a fulphuret of gold; and which, according to the experiments of Bucholz and Oberkampf, is compofed of

	Bucholz.	Oberkampf.
Gold - -	100	100
Sulphur -	21.95	24.39

With refpect to the oxyds of gold, there are ftill very great confufion and uncertainty. According to Berzelius, who is one of the moft recent experimentalifts on gold, the purple oxyd is a compound of 100 gold + 12.077 oxygen; and the protoxyd of 100 gold + 4.026 oxygen. On this fuppofition, the weight of an atom of gold, as eftimated by Dr. Thomfon, will be 248.75, and this determination agrees tolerably well with Oberkampf's analyfis of the fulphuret of gold above-mentioned. Still, however, thefe refults are by no means fatisfactory.

GOLDSINNY, *r.* Goldfinny.

GOMPHOSUS, in *Ichthyology*, a genus of fifhes of the Thoracici order, inftituted by count de Cepede from the MSS. of Commerfon; the characters of which are, that the jaws are lengthened into a tubular fnout, and that the teeth are fmall, thofe in front being larger. There are two fpecies, both natives of the Indian feas, *viz.* G. *cæruleus*, or G. entirely of a blue colour, about the fize of a tench, with a blackifh caft on the pectoral fins; body arched above, and in a greater degree beneath; fnout about one-feventh of the whole fifh; upper jaw larger than the lower; the fides of the mouth fmooth and blue, head and gill-covers plain, the reft of the body covered with fcales, the lateral line through its whole courfe marked with fmall ftreaks like Chinefe characters: and G. *variegatus*, or variegated with red, yellow, and blue; a beautiful fifh, obferved by Commerfon about the coafts of Otaheite.

GOOCHLAND, l. 4, *r.* 10,203 inhabitants, of whom 5664 were flaves in 1810.

GOODYERA, in *Botany*, dedicated by Mr. Brown, to the worthy memory of Mr. John Goodyer, a Hampfhire botanift, celebrated in various parts of Gerarde's Herbal, (fee ed. 2. 1018, 228, &c.)—Br. in Ait. Hort. Kew. v. 5. 197.

197.—This genus founded on *Satyrium repens*, Linn. we have not as yet ventured to separate from NEOTTIA; see that article.

GORHAM, l. 4. r. 2632.

GOSHEN, in America, l. 4, r. 692; l. 7, containing 86 inhabitants; l. 8, r. 1273; l. 10, r. 1641. At the close, add—Alfo, a town of Chefhire county, in New Hampfhire, having 563 inhabitants.—Alfo, a town of Lincoln county, in Georgia. See LINCOLN.—Alfo, a townfhip of Columbiana county, in Ohio, having 277 inhabitants.—Alfo, a town of Ohio, in Tufcarawa county, having 320 inhabitants.

GOSPORT, col. 2, l. 30, r. 1811—7788; l. 31, r. 1439.

GOSPORT, in America, l. 3, r. 72.

GOTHEBORG, col. 2, l. 5, r. amounted in 1811 to 24,858 perfons, &c.

GOULDSBOROUGH. Add—the town contains 471 perfons.

GRABS, the name of veffels peculiar to the Malabar coaft, generally with two mafts, and of 180 tons burthen, but fometimes with three mafts, and about 300 tons burthen. They are fo conftructed as to draw little water, being very broad in proportion to their length, becoming narrow from the middle to the end, and having a prow projecting like that of a Mediterranean galley: others are conftructed with a ftrong deck fixed with the main-deck of the veffel, from which, however, it is feparated by a bulk-head that terminates the forecaftle; on the main-deck under the forecaftle are mounted two pieces of cannon, of nine or twelve pounders; the cannon of the broad-fide are from fix to nine pounders.

GRAFTON, l. 4, r. 1365; l. 8, r. 35; l. 9, r. 28,462; l. 12, r. 931; l. 18, r. 946.

GRAIN, as a weight, l. 11, *dele* bread.

GRAINS *of Paradife*. See AMOMUM and CARDAMOM.

GRAINGER, l. 6, r. 6397 and 537.

GRAMPOUND, l. *penult.* r. 601 and 96.

GRANBY, l. 5, r. 850; l. 8, r. 2696.

GRAND ISLE. Add—It contains 3445 inhabitants by the cenfus of 1810.

GRAND *Junction Canal*, l. 16 from bottom, for began r. begun.

GRAND *View*, a townfhip of Ohio, in Wafhington county, having 463 inhabitants.

GRANLEY, a townfhip of Effex county, in Vermont, having 120 inhabitants.

GRANTHAM. In 1811, the borough and parifh contained 673 houfes, and 3646 perfons; *viz.* 1677 males, and 1969 females: 61 families being employed in agriculture, and 430 in trade and manufactures.

GRANVILLE, l. 2, r. 15,576; l. 3, r. 7746; l. 9, r. 1504.

GRANVILLE, a townfhip of Licking, in Ohio, having 674 inhabitants.

GRAPHITE. See PLUMBAGO, and MINERALOGY, *Addenda.*

GRAVESEND, col. 2, l. 3, r. 3119; l. 4, r. 525.

GRAY, l. 3, r. 1310.

GRAYSON, l. 2, r. 4941 inhabitants, of whom 270 were flaves in 1810; add—Alfo, a county of Kentucky, containing 2301 inhabitants, of whom 103 were flaves in 1800.

GREEN, l. 6, r. 19,536 inhabitants, of whom 367 were flaves; l. 10, r. 12,544; l. 14, r. 6603, of whom 1354 were flaves; l. 16, r. 4567 and 1842; l. 19, r. 1277; l. 23, r. 1497; l. 24, for Franklin county, add—Alfo, a townfhip in Wafhington, r. Green, adding after ftate—with 1708 inhabitants; then add—Alfo, a townfhip of Ohio, in Fayette county, with 290 inhabitants.—In Gallia county, with 421.—In Hamilton county, with 916.—In Jefferfon county, with 875.—In Rofs county, with 1183.—In Scioto county, with 507.—In Trumbull, with 559.—In Columbiana county, with 338 inhabitants; all in the diftrict of Ohio.

GREEN *Briar*, l. 4, r. 5914 inhabitants, of whom 494 were flaves in 1810.

GREEN *Earth*. See MINERALOGY, *Addenda.*

GREENE, l. 2, r. 9713 and 655; l. 7, containing, together with Greenborough town, 11,769 inhabitants, the county having 4992, and the town 244 flaves, included in the above number; l. 12.—By the cenfus of 1810, it contains fix townfhips, and 5870 perfons.

GREENE, in Pennfylvania. See GREEN.

GREENE, in Maine. See GREEN.

GREENE, a town of Adams' county, in Ohio, having 393 inhabitants.

GREENFIELD, l. 5, r. 1165; l. 7, r. 980; add—Alfo, a townfhip of Bedford county, in Pennfylvania, having 855 inhabitants.—Alfo, a townfhip of Ohio, in Fairfield county, having 743 inhabitants.

GREENLAND, in America, l. 3, r. 592.

GREENLAW, col. 2, l. 2, r. In 1811, it contained 253 houfes, and 1260 inhabitants.

GREENOCK, l. 3, after Glafgow, add—The parifh, including Eaft, Middle, and Weft Greenock, contained, in 1811, 1138 houfes, and 19,042 perfons.

GREENSBOROUGH, in Georgia. See GREEN; l. 6, r. 566.

GREENSBURGH. Add—It contains 132 inhabitants, including 47 flaves.

GREEN-STONE, in *Geology*, *grunftein*, Werner, a fpecies of granular trap or bafalt, compofed of hornblende and felfpar, and defcribed in our article TRAP. (See TRAP.) It has recently been difcovered, that the mineral called augit, or pyoxene by Haüy, is a conftituent part of many rocks of green-ftone, which confirms ftill further the fimilarity between volcanic and bafaltic rocks. See VOLCANIC *Products*.

GREENSVILLE, l. 4, r. 6853 inhabitants, of whom 4599 were flaves in 1810.

GREENVILLE, l. 3, r. 13,133 and 2353.

GREENUP, a county of Kentucky, containing 2369 perfons, of whom 484 were flaves in 1810.

GREENWICH, col. 4, l. 28 from bottom, r. 16,947 and 2315.

GREENWICH, in America, l. 3, r. 1225; l. 6, add—containing 2858 perfons; l. 9, in 1810, 2528; l. 13, add—in 1810, 858 inhabitants; l. 12, r. 3533. Add—Alfo, a townfhip in Berks county, in Pennfylvania, having 1104 inhabitants.

GREENWICH, *Eaft*, l. 3, r. 1530.

GREENWICH, *Weft*, a townfhip in the fame county and ftate, containing 1619 inhabitants.

GREENWOOD, l. 1, r. Northumberland; l. 2, r. 1028; add—Alfo, a townfhip in Cumberland county, having 1102 inhabitants.

GREGORY, DAVID, l. *ult.* It appears by the infcription on his monument in St. Mary's church, Oxford, that he died Oct. 10, A.D. 1708; and not, as the writer of his life in the Biog. Brit. fays, in 1710, whence this date is cited. He died at an inn at Maidenhead, in his way to London from Bath, and was buried in this town.

GRENATITE. See MINERALOGY, *Addenda.*

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GREY *Antimony Ore*. See Mineralogy, *Addenda*.

GRIESBACH, John Jacob, in *Biography*, an eminently learned divine of Germany, was born in 1745, in Hesse-Darmstadt; and at the Gymnasium at Frankfort, and the university of Tubingen, acquired that acquaintance with the learned languages, for which he was so distinguished, and which he applied to the most valuable biblical purposes. He sought further means and opportunities for improvement at Halle and Leipsic. In order to acquaint himself with the variety of religious sects, and for the purpose of consulting public libraries, he commenced in 1769 an extensive tour, visiting Holland, England, and Paris. In 1770 he returned to Frankfort, with a view of arranging the stores which he had collected. In 1773 he was appointed professor extraordinary of divinity at Halle; and in 1774–1775 appeared his first great work, which was a critical edition of the historical books of the New Testament in Greek. From Halle he removed to Jena in 1775, and became third professor of divinity. Having previously published several critical dissertations in reference to biblical subjects, he completed, in 1777, his edition of the whole Greek Testament in 2 vols. As his reputation increased, his appointments and labours multiplied. But the great object to which his attention was principally devoted, was the completion of his edition of the New Testament, which appeared in 1803, 4, 6, and 7, in 4 vols. A larger edition, begun in 1796 and finished in 1806, was adapted for sale in England as well as in Germany; and was liberally encouraged by the munificence of the late duke of Grafton. In 1811 professor Griesbach's health began to decline, and in 1812 he was under a necessity of giving up the province of lecturing; and a disorder in the chest terminated his life on the 24th of March 1812, in the 68th year of his age. His corporeal form was athletic, his aspect grave and somewhat austere; but he possessed a kind heart, excellent moral principles, an independent spirit, and universal philanthropy. Gen. Biog.

GRIMSBY, l. 19 from bottom, after Grimsby insert—(both borough and parish); l. 18, *r.* 619 and 2747.

GROGGINESS, in *Farriery*, a stiffness in the foot of a horse occasioned by battering the hoof on hard ground, which is often succeeded by swelling of the leg and contraction of the sinews. A horse that bears altogether upon his heels in trotting is denominated "groggy;" and the defect is generally incurable.

GROTON, l. 3, *r.* 549; l. 6, *r.* 449; l. 8, *r.* 1886; l. 11, *r.* 4451.

GROTTO, col. 2, l. 36. Add—The grotto in Savoy is a prodigious work, said to have been begun by Cæsar, but principally executed by Charles II. duke of Savoy in 1760. It is a passage cut through the mountain near the delightful valley of Echelles to the length of 5000 yards, and in perpendicular height above 100 feet; it is wide enough for two carriages to pass. About half way is a complete tunnel, running in another direction, 1000 feet long, and 36 feet high, cut by order of Buonaparte for the conveyance of cattle. Six years, both night and day, were devoted to the completion of it.

GRYLLUS. Under genus Gryllus, species Crystatus, add—See Locust and Acridophagi.

GUADALAJARA, col. 2, l. 3, after annually, add—The population is estimated at 75,000, but according to Humboldt 19,500 in 1803, and that of the administration 5,630,500. N. lat. 20° 50′. W. long. 105°.

GUAIACUM, *Chemical Properties of*. Guaiacum was formerly considered as a resin, though in its properties it differs considerably from resins. Guaiacum always assumes a green colour when exposed to the light in the open air. When heated, it melts and diffuses at the same time rather a fragrant odour. Its sp. gr. is 1.2289. It is very sparingly soluble in water, but imparts to that fluid a greenish-brown colour, and a sweetish taste. Alcohol dissolves it with facility, and forms a deep brown coloured solution. Sulphuric ether also dissolves it, but not in such large proportions as alcohol. It is readily soluble in alkaline solutions. Most of the acids also act upon it with considerable energy; thus sulphuric acid dissolves it, and forms a deep red solution. Nitric acid dissolves it completely with effervescence, and when the solution is evaporated, it yields a very large proportion of oxalic acid, but no artificial tannin. Muriatic acid acts but slightly on guaiacum. When guaiacum is submitted to destructive distillation, it yields a little acidulous water, a considerable proportion of brown empyreumatic oil, some gaseous products, and a quantity of charcoal is left on the retort nearly equal to one-third of the original weight of the guaiacum.

GUANAJUATO, l. 2, *r.* Quaractaro, and between 21° 30′ and 22° 30′ N. lat., and 100° and 105° W. long., extending from N. to S. 75 miles, from E. to W. 85 miles. Humboldt estimates the population of the administration at 517,300, and of the capital, in N. lat. 21°. W. long. 105°, at 41,000.

GUANARA, at the end, *r.* Depons' &c.

GUAXACA, l. 5, after distance, add—between 16° and 18° N. lat., 98° and 112° W. long.; from E. to W. 230 miles, from N. to S. 175 miles:—l. 32, after persons—that of the province 534,800. At the close—W. long. 96° 25′.

GUERNSEY, a county of Ohio, containing 9 townships, and 3050 inhabitants.

GUGAH, a town of Scind, in the Persian empire, built at the foot of a hill, at the bottom of which runs a small creek in N. lat. 24° 45′. E. long. 68° 7′, and containing 600 inhabitants.

GUILDER, or Gilder. See Florin.

GUILDFORD, last lines, *r.* 495 and 2974.

GUILDHALL, l. 3, *r.* 544.

GUILFORD, l. 2, *r.* 1961; l. 4, *r.* 1872.

GUM, *Chemical Properties of*. The best test for gum in solution, according to the experiments of Dr. Thomson, is silicated potash. When added to a very dilute solution of gum, it produces a white flaky precipitate. Gum arabic is composed, according to

	Gay Lussac and Thenard.	Berzelius.
Of Hydrogen	6.93	6.788
Carbon	42.23	41.906
Oxygen	50.84	51.306
	100.	100.

The varieties of gum are very numerous, and probably differ considerably in their chemical properties, though few of them have been examined. (See Cerasin.) It has been remarked by Mr. Barrow, and probably also by others, that all trees which yield gum have an astringent bark.

GUNPOWDER, col. 2, l. 31 from the bottom, after 1326, add—or, as others say, 1354, (Watson's Chem. Ess. vol. i.)

GUN-SHOT Wounds. At the end, add—See Wounds.

GURIEL, *r.* a small country of Asia.

GURMSYL, or Gurmesseer, meaning a warm climate, a district of Mekran, which is a narrow tract, about five days'

days' journey N.W. of Nooſhley, probably the bed of a river, half a mile wide, between two high banks, fertile in grain, and being watered by the Heermund river, needs little cultivation. The inhabitants are notorious robbers, compoſed of the outcaſts of the ſurrounding country.

GYMNADENIA, in *Botany*, Br. in Ait. Hort. Kew. v. 5. 191, (*Orchis conopſea* of Linnæus, &c.), is ſeparated from Orchis, (ſee that article,) merely becauſe the *glands* ſupporting the *pollen*, are, as the name expreſſes, *naked*, or not encloſed in any hood; a character which appears to us not eſſential.

GYMNETRUS, in *Ichthyology*, a genus of the Thoracici order of fiſhes; the characters of which are, body very long, compreſſed; teeth numerous, ſubulate; gill-membrane four or five rayed; and deſtitute of anal-fin. The ſpecies are, *G. Aſcanii*, or ſilvery G. ſpeckled longitudinally with brown points. A native of the northern ſeas, and probably firſt deſcribed by Aſcanius, in his "Icones rerum naturalium," and length ten feet, diameter about ſix inches; head ſhort, mouth ſmall, and eyes rather large. This fiſh is ſaid to be generally ſeen either preceding or accompanying the ſhoal of herrings in the northern ſeas, and therefore is popularly known by the appellation of "king of the herrings." Of this there is a variety, as Dr. Shaw ſuggeſts, called the Ruſſelian Gymnetrus.

G. argenteo-cæruleocus, or a blueiſh-ſilvery G. with oblique, linear, brown bands, and rounded ſpots, red fins, and four central proceſſes. A native of the Indian ſeas, and occaſionally ſeen in thoſe of Europe.

G. cepedian is a doubtful ſpecies, of a gold colour, ſhaded with brown. See Shaw's Zoology, vol. iv. pt. ii.

GYMNIAS. Add—The ſcite of Gymnias, according to Rennell's "Illuſtrations of the Hiſtory of the Expedition of Cyrus, &c." was a town and village, named by others Camuſour, and by others Coumbas and Kumakia, which ſtands on the northern bank of the river Æraſk, about 31 miles below its ſource, and on the eaſtern border of Perſia, in the country of the Phaſiani.

H.

HACKENSACK, in *Geography*, a town of Bergen county, in New Jerſey, having 1918 inhabitants.

HACKNEY, l. 3 from the bottom, *r.* given by Mr. Decuyer. By the returns of 1811, the pariſh of St. John, Hackney, contains 2699 houſes, and 16,771 inhabitants: but this, like the other villages in the neighbourhood of London, is daily increaſing.

HADDAM, l. 3, *r.* 2205; l. 5, *r.* 2537.

HADDINGTON, l. 7, *r.* 1811—1671, and 4370.

HADDINGTONSHIRE, col. 2, l. 36, *r.* 1811—5882, and 31,164.

HADLEY, l. 4, *r.* 509—2592—1811.

Hadley, l. 5, *r.* 1247.

HAIGH, l. *ult. r.* 1811—213—1118.

HAIR, *Chemical Properties of*. See Integuments, and Wool.

HALES-OWEN, in *Geography*. In 1811, the pariſh contained 1360 houſes, and 6888 perſons; 3451 being males, and 3437 females: 127 families employed in agriculture, and 1261 in trade, manufactures, and handicraft.

HALESWORTH, l. 4, for townſhip *r.* pariſh; *r.* 342, and 1810.

HALIFAX, col. 2, l. 5 and 6, *r.* 1811—2151, and 9159; l. 3 from the bottom, *r.* 703; l. *ult. r.* 1758; after inhabitants, add—Alſo, a townſhip of Dauphin county, in Pennſylvania, having 1365 inhabitants. Col. 2, l. 5 and 6, *dele* the numbers; l. 8 and 9, *r.* 15,620—6624; l. *ult. r.* 22,133 inhabitants, of whom 9663 were ſlaves in 1810.

HALLATON, l. 3, *r.* 147, and 598.

HALLOWELL, l. *ult. r.* 2068.

HALSTEAD, l. 5 and 4 from the cloſe, *r.* 1811—722—3279.

HALTON. In 1811, this townſhip contained 151 houſes, and 894 perſons; 463 being males, and 431 females.

HALTWHISTLE. In 1811, this townſhip contained 142 houſes, and 751 perſons; 368 being males, and 383 females.

HAM, l. 6, *r.* 1811—182, and 1267; l. *ult.* after marſh, add—The number of houſes, in 1811, was 1344, and of inhabitants 8136.

HAMBATO, l. 3, after Quito, add—See Riobamba.

HAMDEN, l. 4, after Wincaſſet, add—See Hampden; l. 6, *r.* 1716.

HAMILTON, in Scotland. This town and pariſh, in 1811, contained 768 houſes, and 6453 perſons; 2928 being males, and 3525 females: 243 families employed in agriculture, and 1131 in trade, &c.

Hamilton, l. 3, *r.* 780; l. 6, after Northampton, add—the latter having 1044, the ſecond having 1263 inhabitants; l. 8, add—and others, *r.* 15,258. Add—Alſo, a townſhip of Ohio, in Trumbull county, having 326 perſons.—Alſo, a townſhip of Ohio, in Warren county, having 1238 inhabitants.

HAMILTONIA, in *Botany*, Ait. Hort. Kew. v. 5. 480. See Pyrularia.

HAMLETS, Tower, a particular diſtrict in the county of Middleſex, commanded by the conſtable of the Tower, or lieutenant of the Tower-hamlets, for the ſervice and preſervation of that royal fort.

The *Royal Tower-Hamlets* comprehend the militia raiſed in the diſtrict of the Tower, which is divided into two battalions, *viz.* 1ſt and 2d, officered like other corps belonging to that eſtabliſhment, and ſubject to the ſame regulations.

HAMMERSMITH, l. 3, *r.* 1811—978—7391.

HAMPDEN. Add—containing 1279 inhabitants.

HAMPSHIRE, col. 2, l. 14, *r.* 1811; l. 15, *r.* 43,210; l. 16, *r.* 245,080—118,855; l. 17, *r.* 126,228.

Hampshire, in America, l. 7, *r.* 64—76,275; l. 16, *r.* containing 9784 inhabitants, of whom 929 are flaves.

HAMPSTEAD, col. 2, l. 8 from the end, *r.* 1811—842—5480.

Hampstead, in America, l. *ult.* *r.* 1810—738.

HAMPTON, l. *ult.* *r.* 1811—229—1984.——In America, l. 2, *r.* 1274.

Hampton, *Eaft*, l. 3, *r.* 660; l. 9, *r.* 1810; l. 10, *r.* 990; l. 18, *r.* 1810; l. *ult.* *r.* 570.

HANCOCK, l. 7, *r.* 31,031; l. 13, *r.* containing together with its town 13,330 inhabitants, of whom the flaves in the county are 6278, and in the town 78; l. 19, *r.* 1049; l. 23, *r.* 1184; l. 26, *r.* 311.

HANIFAH, Abou, in *Biography*, a celebrated Mahometan doctor of the 8th century, who was the founder of the fect denominated Hanifites, and who was imprifoned at Bagdad by the caliph Almanfor, becaufe he would not fubfcribe to the doctrine of abfolute predeftination. He was born at Cufa in the year 700, and died in prifon in the 70th year of his age. After his death his doctrine acquired reputation; and in the year 1092 a maufoleum was erected to his memory, and alfo a college for the votaries of his fect. This brief account of him may not be unamufingly clofed with the following anecdote:—Having received from an adverfary a rude blow on his face, he faid to the perfon who thus affaulted him, "I could return you outrage for outrage, but I will not; I could accufe you to the caliph, but I will not; I could pray to God to avenge the affront, but I will not: if the day of judgment were now come, I would pray to God that I might enter heaven with you." D'Herbelot, Bibl. Orient.

HANOVER, col. 3, l. 6, after Pennfylvania, add—with 63 inhabitants; l. 9, add—the former having 1387, and the latter 2461 perfons; l. 14, *r.* 1171; l. 16, add—containing 2135 inhabitants; l. 22, add—having 3843 inhabitants.—Alfo, a town of Burlington county, New Jerfey, having 2536 perfons:—l. 25, *r.* containing 15,082 perfons, of whom 8454 are flaves.

Hanover, a townfhip of Ohio, in Columbiana county, having 735 inhabitants.—Alfo, a townfhip of Ohio, in Licking county, having 651 inhabitants.

Hanover, *New*. Add—Alfo, a county of New Orleans, having 11,465 perfons, of whom 6442 are flaves.

Hanover, *Upper*, a townfhip in Montgomery county, in Pennfylvania, with 725 inhabitants.—Alfo, a townfhip in Northampton county, in the fame ftate, having 939 perfons.—Alfo, a townfhip in Beaver county, in the fame ftate, having 1090 perfons.

HARAN. Add—This is a town of the pachalic of Orfa, inhabited by wandering Arabs, who were led hither by a plentiful fupply of water, and fituated in N. lat. 36° 52′. E. long. 36° 5′, on a flat fandy plain. See Charræ.

HARBOROUGH, col. 2, l. 30, *r.* 1811—335—1704.

HARDEN. See Hardin.

HARDIN, or Harden, *r.* 7330—893; add—Alfo, a townfhip of Prebble county, in Ohio, having 802 inhabitants.

HARDISTON, a town of Suffex county, in New Jerfey, having 1702 perfons.

HARDWICK, l. 2, *r.* 734; l. 4, *r.* 1657; l. 6, add—containing 2561 perfons.

HARDWICKIA, in *Botany*, fo called in honour of a moft able and indefatigable botanift and zoologift, Col. Thomas Hardwicke, F.L.S. long refident in the Eaft Indies. Roxb. Corom. v. 3. 6.—Clafs and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Calyx none. Petals five, nearly equal. Legume with one feed.

1. H. *binata*. Roxb. t. 209.—Native of the mountains of the coaft of Coromandel. A large and handfome *tree*, yielding valuable timber. *Leaves* alternate, ftalked, binate; leaflets unequally elliptical, entire, fmooth, from one to three inches long. *Flowers* numerous, rather fmall, yellowifh, in axillary and terminal panicles. *Legume* lanceolate, an inch and a half long. *Seed* wedge-fhaped, inferted at the fummit.

HARDY, l. 2, *r.* 5525, of whom 749 are flaves.

HAREWOOD, l. 5, *r.* In 1811, its five townfhips contained 259 houfes, and 1315 perfons.

HARFORD, l. 3, *r.* 21,258—4431; add—Alfo, a townfhip of Luzerne county, in Pennfylvania, having 478 inhabitants.

HARLEM, l. 2, *r.* 939.

HARLESTON, l. 17, *r.* 1811; l. 18, *r.* town and Reddenhall; *r.* 277—1516.

HARLOW. In 1811, the parifh contained 256 houfes, and 1695 perfons; 883 being males, and 812 females: 191 families employed in agriculture, and 102 in trade, manufactures, and handicraft.

HARMONY. Add—It contained, in 1810, 80 perfons.—Alfo, a townfhip of Ohio, in Champaign county, having 595 inhabitants.—Alfo, a townfhip of Maine, in the county of Somerfet, having 351 inhabitants.

HARP, col. 2, l. 10 from the bottom, for lyre *r.* liar.

HARPERSFIELD. Add — Alfo, a townfhip of Geauga county, in Ohio, having 490 inhabitants.

HARPSWELL, a townfhip of America, in Maine, and county of Cumberland, having 1190 inhabitants.

HARRAN. See Haran.

HARRINGTON, l. 3, *r.* 469; at the clofe, add — It contains 2187 inhabitants.

HARRISON, l. 6, *r.* 9958 inhabitants, of whom 458 were flaves in 1810; l. 9, *r.* 7883, of whom 989 were flaves. Add—Alfo, a town of Maine, in Cumberland county, having 439 inhabitants.—Alfo, a townfhip of Ohio, in Pickaway county, having 291 inhabitants.—Alfo, a county of Indiana, containing 2338 inhabitants; of whom, in 1810, 15 were flaves.—Alfo, a townfhip of the faid county, the other being Exeter.—Alfo, another county in the fame territory, which, with its townfhip, Wafhington, contains 1257 perfons, including 6 flaves.

HARROW, col. 2, l. 9, infert—The town, with the hamlet of Roxath and Sudbury, contains 283 houfes, and 1689 inhabitants.

HARROWGATE, l. *penult.* add—The townfhip of Bilfon and Harrowgate contains 286 houfes, and 1583 perfons.

HARTFORD, l. 3, *r.* 1831; l. 6, *r.* Oxford for Cumberland; l. 7, *r.* 720; l. 12, *r.* 19; l. 13, *r.* 44,733.

Hartford *City*, l. 11, *r.* 3955. Add—Hartford, except the city, a townfhip of Hartford county, Connecticut, contains 2048 inhabitants.

Hartford, *Eaft*, l. 4, *r.* 3240.

HARTLAND, l. 5, *r.* 2352. Add—Alfo, a town of Hartford county, in Connecticut, having 1284 inhabitants.

HARWARD, a town of Worcefter county, in Maffachufetts, containing 1431 inhabitants.

HARWICH, l. 3 and 4, *r.* 1811—564—3732.

Harwich, in America, l. 4, *r.* 1942.

HARWINGTON, l. 2, *r.* 1718.

HASLEMERE, l. 4, *r.* 146—756.

HASLINGDEN, l. 3 and 4, *r.* 962—5127.

HASSELQUIST, l. 5, *r.* 1722. Col. 2, l. 26, *r.* 1747; l. 32, *r.* 1749.

HASTINGS, l. 4, *r.* 5268—34,826.

HATFIELD, l. 3, *r.* 409—2066.

HATFIELD, l. *ult. r.* 1811—2677—501.

HATFIELD, l. *ult. r.* 805 inhabitants. Add—Alfo, a townfhip of Montgomery county, in Pennfylvania, containing 652 inhabitants.

HATHERLEIGH, l. *ult. r.* 1811—1380, and 223.

HAVANT, l. 6, *r.* 1811; l. 7, *r.* 357, and 1824.

HAVEN, EAST, l. 3, *r.* 1209; l. 5, add—containing 30 inhabitants.

HAVEN, *Fair*, a town of Rutland county, in Vermont, having 645 inhabitants.

HAVEN, *New*, col. 2, l. 2, for 14 *r.* 18; l. 3, *r.* 1810—37,064 inhabitants, of whom 50 are flaves; l. 17, after in, add—1810, 5772 perfons; l. 26, add—For fome further particulars, fee NEW HAVEN and UNITED STATES.

HAVEN, *New*, a townfhip of New Haven, which, the city excepted, contains 1195 inhabitants.

HAVERFORD, l. 2, *r.* 754.

HAVERFORDWEST, l. 19, *r.* and alfo feven fairs in the year for, &c.; *dele* on the 7th of July; l. 41 and 42, *r.* 1811—3093, and 630.

HAVERHILL, l. 5, *r.* 1811—242—1216. Do. in America, col. 2, l. 13, *r.* 2682.

HAUYNE. See MINERALOGY, *Addenda*.

HAWARDEN, l. 7, *r.* 1811—832—4436.

HAWICK, col. 2, at the clofe, add—By the return of 1811, Hawick contained 1163 houfes, and 7645 perfons.

HAWKE, l. 3, *r.* 412.

HAWKINS, l. 1, *r.* Eaft Tenneffe; l. 4, *r.* 7643; l. 5, *r.* 930.

HAWKSHEAD, l. 18 from the bottom, *r.* 1811—149—676.

HAWLEY, l. 2, *r.* 1031.

HAY, l. 4, *r.* The parliamentary return of 1811 ftates the number of inhabitants to be 1099, and that of houfes 231. It has one market on Thurfday, and five fairs. A woollen manufacture has lately been eftablifhed here.

HAYLING, l. 7, *r.* 1811—110—620.

HAYNES, a townfhip of Centre county, in Pennfylvania, having 1791 inhabitants.

HAYTI, a name given by the natives to the ifland of *St. Domingo* (which fee). The dimenfions are differently ftated by different writers. Some fay, that it extends 140 or 150 miles in breadth from N. to S., and about 400 miles in length from E. to W. Mr. R. Edwards affigns 390 for the length: Rainsford fays, that it is more than 450. The abbé Raynal reprefents it as 200 leagues in length, and 60, in fome places 80, in breadth. When the French had this ifland, a proclamation, announcing its independence, was publifhed, figned by Deffalines, Chriftophe, and Cherveaux, dated Nov. 29, 1803. The liberated blacks now determined on difcarding the appellation which the ifland had received from Europeans, and reviving the name of Hayti, by which it was defignated by the aboriginal inhabitants when firft vifited by Columbus. On the 1ft day of the year 1804, the general and chiefs of the army, in the name of the people of Hayti, figned a formal declaration of independence, and took a folemn oath to renounce France for ever, pledging themfelves to each other, to their pofterity, and to the univerfe, to die rather than fubmit again to her dominion. At the fame time, they appointed Deffalines governor for life, with power to enact laws, to make peace and war, and to nominate his fucceffor. One of the firft acts of his government was to arrange the return of negroes and mulattoes from the United States of America. He alfo treated with the Britifh agent for Jamaica, offering to open his ports to flave fhips, and to allow the people of Jamaica the exclufive privilege of felling negroes in Hayti; intending thefe not for flavery, but for military fervice. Some of the French inhabitants had remained upon the general evacuation of the ifland, confiding in the favour and mercy of Deffalines. But their confidence was mifplaced; for in a few weeks he meditated their deftruction, and iffued mandates, no lefs perfidious than cruel, for a general maffacre. He then proceeded to the fubjugation of the few Spaniards who inhabited the eaftern part of the ifland, and with laying fiege to the city of Domingo, which was poffeffed by a fmall detachment of French troops. In this fiege he was unfuccefsful; and after his return from it, he affumed the title of emperor. The empire was divided into fix military divifions, with a general over each, independent of one another. The generals of divifion and brigade compofed the council of ftate, and they had a minifter of finance, another of war, and a fecretary of ftate. All perfons decided their differences by arbitration, military crimes were fubjected to fpecial jurifdiction: no predominant religion was admitted, nor was the ftate to provide for the maintenance of any religious inftitution. Marriage was declared to be an act purely civil, and divorce in fome cafes was allowed. In a cenfus, taken in 1805, of the inhabitants of the part of the ifland under the power of Deffalines, the returns were about 380,000, to which fome incidental omiffions 20,000 were added, making the whole number 400,000. The regular army confifted of 15,000 men, of whom 1500 were cavalry. Confiderable attention was paid to the fubject of education. The young Haytians were generally taught to read and write. Deffalines, whilft he poffeffed feveral good qualities, was ferocious and cruel; and at length his atrocious acts of tyranny caufed an infurrection of the army, which was followed by his premature death by violence, on the 17th of October, 1806. Chriftophe, who, fince the expulfion of the French, had been fecond in command, immediately affumed the fupreme power. He had been a flave in St. Domingo at the revolution in 1791, and an early friend and faithful adherent of Touffaint, whom he refembled in character. Difcarding the pompous title of emperor, he modeftly defignated himfelf "chief of the government of Hayti." He made feveral enactments, and iffued proclamations favourable to commerce. Petion, however, foon appeared as a candidate for the fovereign power; the ftruggle between him and Chriftophe was fierce, and in a battle fought January 1ft, 1807, between the two armies, Petion was defeated, and faved himfelf by flight. In a council convened at Cape François, a new conftitution was publifhed Feb. 17, 1807, in which flavery was for ever abolifhed in Hayti; and the government was vefted in a chief magiftrate for life, who appointed his fucceffor. The council of ftate confifted of nine members, two-thirds of whom were generals; fo that the government approached nearly to an oligarchy. The ftruggle for fovereignty ftill continued, and was carried on for feveral years; many battles being fought, in fome of which Chriftophe, and in others Petion was victorious. In the fpring of the year 1811, Chriftophe changed the title of prefident for that of king, and the royal dignity was eftablifhed by a conftitutional act in his perfon and family. In July 1816, after Louis XVIII. was reftored to the throne, commiffioners were fent to St. Domingo, entrufted with the adminiftration of all the affairs of the ifland, both civil and military. Thefe commiffioners addreffed letters to Chriftophe, which gave offence. Although the two governments which rule the northern and fouthern diftricts have not eftablifhed any relations of mutual amity, they have remained in a ftate of perfect tranquillity, and have devoted their attention to the cultivation of their refpective territories, and to the civilization and improvement of their people. Schools upon a Lancafterian plan have been eftablifhed. From the zeal manifefted by both chiefs in this noble caufe of public inftruction, and the progrefs already made in carrying their wife and benevolent defigns into effect, there is great reafon to hope, that in a few years the ifland of Hayti will exhibit a population as generally educated as that of any country on the face of the globe. See Hiftory of the Ifland of St. Domingo, &c. London, 8vo. 1818.

HEARING, col. 2, l. *ult.* infert after ear—(fee EAR.)

HEAT, col. 2, l. 2, infert after CALORIMETER—in the fequel of this article.

HEAT. Many important additions have been made to our knowledge refpecting heat and its effects, which our limits will only permit us to mention very briefly here. In doing this, we fhall follow the fame arrangement as that adopted in the original article, and confine ourfelves chiefly to the refults.

Capacity for Heat, or fpecific Heat.—In the year 1813, a moft elaborate fet of experiments was publifhed by Delaroche and Berard, on the fpecific heat of the gafeous bodies. The refults of former experimentalifts refpecting this part of the fubject were not, as we remarked, very fatisfactory; but from the care with which the prefent experiments were made, philofophers in general appear inclined to admit their accuracy.

Specific Heat of the Gafes referred to Air.			Specific Heat of the Gafes referred to Water.	
	Same Bulk.	Same Weight.		Same Weight.
Air -	1.0000	1.0000	Water -	1.0000
Hydrogen	.9033	12.3401	Air -	.2669
Carbonic acid	1.2583	.8280	Hydrogen	3.2936
Oxygen -	.9765	.8848	Carbonic acid	.2210
Azote -	1.0000	1.0318	Oxygen	.2361
Oxyd of azote	1.3503	.8878	Azote -	.2754
Olefiant gas	1.5530	1.5763	Oxyd of azote	.2369
Carbonic oxyd	1.0340	1.0805	Olefiant gas	.4207
			Carbonic oxyd	.2884
			Aqueous vapour	.8470

From the recent experiments of Dulong and Petit it appears, that the capacity of folid bodies follows the fame law as that of liquids, that is to fay, it increafes with the temperatures meafured by an air-thermometer. They would be even increafing according to thefe experimentalifts, if we were to employ a mercurial thermometer. See the fection *Expanfion by Heat* below. Thus,

The mean capacity of iron, from 0° to 100° = 0.1098
0 to 200 = 0.1150
0 to 300 = 0.1218
0 to 350 = 0.1255.

In the following table, for the other metals they have only given the meafures taken at 100°, and at 300°.

	Mean Capacity between 0° and 100°.	Mean Capacity between 0° and 300°.
Mercury - -	3.0330	0.0350
Zinc - - -	0.0927	0.1015
Antimony -	0.0507	0.0549
Silver - -	0.0557	0.0611
Copper - -	0.0949	0.1013
Platinum - -	0.0355	0.0355
Glafs - -	0.1770	0.1900

Combuftion, Heat produced by.—A great number of laborious experiments were made by the late count Rumford on this fubject, the general refults of which we fhall briefly mention, as they differ in fome degree from thofe of his predeceffors. Thus, according to him, 1 lb. of

	lbs. Ice.
Olive-oil when burnt melted	93.073
Rape-oil - -	124.097
Wax - -	126.242
Tallow - -	111.582
Alcohol - -	67.470
Sulphuric ether - -	107.027
Naphtha - -	97.834

This philofopher likewife extended his experiments to the combuftion of woods, with the view of afcertaining which gave out moft heat, and under what circumftances. The general refults were, that the wood of the lime-tree gives out moft heat, and that of the oak the leaft, during combuftion. The extreme limits of his long table, which we regret we cannot give, were, that 1 lb. of lime-wood, highly dried over a chaffing-difh, melted 54.210 lbs. of ice, while 1 lb. of oak, fimilarly dried, melted only 39.728 lbs.

Expanfion of Bodies by Heat.—The law, as recently eftablifhed by Dulong and Petit, refpecting the expanfion of the gafes has been given under GAS. We confine our attention here, therefore, to the expanfion of liquids and folids. The experiments of Dulong and Petit fhew, that the expanfion of bodies by heat is not uniform, and that the laws of expanfion, as laid down by Mr. Dalton, are not to be depended upon. Thus in the following table of the abfolute dilatation of mercury, it will be found that the expanfion above the boiling point of water increafes as the temperature increafes according to the air-thermometer, which from the uniform expanfibility of the gafes is the only one that indicates equal meafures of temperature.

TABLE I.—*Expanfion of Mercury.*

Temperatures deduced from the Dilatation of Air.	Mean abfolute Dilatation of Mercury.	Temperatures indicated by the Dilatation of Mercury fuppofed uniform.
0°	0	0°
100	$\frac{1}{5550}$	100
200	$\frac{1}{5425}$	204.61
300	$\frac{1}{5300}$	314.15

TABLE II.—*Expanfion of Glafs.*

Temperatures deduced from the Dilatation of Air.	Mean apparent Dilatations of Mercury in Glafs.	Abfolute Dilatation of Glafs in Volume.	Temperatures deduced from the Dilatation of Glafs fuppofed uniform.
100°	$\frac{1}{6480}$	$\frac{1}{38700}$	100°
200	$\frac{1}{6378}$	$\frac{1}{36306}$	213.2
300	$\frac{1}{6318}$	$\frac{1}{35300}$	352.9

In the above table, on the dilatation of glafs, the third column fhews that its expanfion is not uniform, but increafes, except between 0° and 100°, where it is the fame as ftated by Lavoifier and Laplace. The laft column contains the degrees which would be indicated by a thermometer formed of of a glafs plate, whofe increafe in length would ferve as a meafure of temperatures.

TABLE III.—*Expanfion of Metals.*

Temperature deduced from the Dilatation of Air.	Mean abfolute Dilatation of Iron.	Temperature indicated by a Thermometer made of a Bar of Iron.	Mean abfolute Dilatation of Copper.	Temperature indicated by a Thermometer made of a Copper Rod.	Mean abfolute Dilatation of Platinum.	Temperature indicated by a Thermometer made of a Platina Rod.
100°	$\frac{1}{28200}$	100°	$\frac{1}{19300}$	100°	$\frac{1}{37700}$	100°
300	$\frac{1}{22700}$	372.6	$\frac{1}{17700}$	328.8	$\frac{1}{30300}$	311.6

When we compare thefe refults with thofe obtained from glafs, it is feen that the expanfibility of folids referred to an air-thermometer is increafing, and that it is unequally fo in each of them.

Our readers will obferve, that MM. Dulong and Petit ufed the centigrade thermometer. See further on this fubject under REFRIGERATION.

See an Effay which gained the prize voted by the Academy of Sciences in 1818, entitled Refearches on the Meafure of Temperatures, and on the Laws of the Communication of Heat, by MM. Dulong and Petit.

Animal Heat.—The above determinations of the fpecific heats of oxygen gas and carbonic acid by Delaroche and Berard, very much diminifh the probability of Dr. Crawford's theory of animal heat. But the moft formidable objections to this theory refult from the experiments of Mr. Brodie. This gentleman found that when artificial refpiration is kept up in the lungs after decapitation, the ufual proportion of carbonic acid gas is formed, and the circulation continues nearly as ufual, yet that in thefe animals the heat diminifhes more rapidly than in the dead animal in which artificial refpiration is not kept up. From thefe experiments, Mr. Brodie concludes that the production of animal heat is owing to the action of the brain, and not to refpiration. See RESPIRATION.

HEATH, in *Geography*, a town of Hampfhire, in Maffachufetts, containing 917 inhabitants.

HEAVY SPAR. See MINERALOGY, *Addenda.*

HEBRON, l. 2, *r.* 563; l. 3, *r.* Oxford for Cumberland; l. 5, add after Portland—containing 1211 inhabitants; l. 8, *r.* 2002.

HEIDELBURG, l. 4, *r.* 3532; l. 6, *r.* 1433. Add—Alfo, a townfhip in Pennfylvania, in Berks county, having 2808 inhabitants.

HEITSBURY, col. 2, at the clofe, *r.* the population of the borough and parifh, returned in the year 1811, was 1023; the number of houfes 198.

HELEN'S, ST., l. 9, *r.* 106—658.

HELLAM, a townfhip of Pennfylvania, in York county, having 1410 inhabitants.

HELLENISTS, col. 2, l. 24, *r.* HELLENISM.

HELMSLEY, l. 5, *r.* 1811—261; l. 6, *r.* 1415.

HELSTON, col. 2, l. 2, *r.* 2297—328.

HEMATIN, in *Chemiftry*, the name given by Chevreul to the peculiar matter conftituting the colouring matter of the *hæmatoxyton campechianum*, or *logwood.*

Hematin may be obtained by digefting, for feveral hours, logwood-powder in water, of the temperature 125°. The liquid is then to be filtered, evaporated to drynefs, and digefted for a day in alcohol of the fp. gr. .837. Filter the alcohol, concentrate it by evaporation, then add a little water, evaporate a little further, and leave it to itfelf. Cryftals of hematin are depofited in abundance. Thus prepared, it is in the form of fmall brilliant cryftals, of a reddifh-white colour, and a flightly aftringent bitter and acrid tafte. It is readily foluble in boiling water, and the folution is of an orange-red colour when warm, which becomes yellow as it cools, but heat again reftores the original colour. Acids render it at firft yellow, then red; fulphureous acid deftroys it altogether. The alkalies and alkaline earths give it a purplifh-red colour, and if in excefs appear to decompofe it. Moft of the metallic oxyds unite with hematin, and give it a blue colour. Gelatine throws it down in reddifh flocks. The other properties of this fubftance do not appear remarkable.

HEMEL-HEMSTED. At the clofe, infert—The population of the parifh, by the return of 1811, amounted to 3240, and the number of houfes to 638.

HEMIONUS. See EQUUS.

HEMLOCK, in *Geography*, a townfhip of Northumberland county, in Pennfylvania, having 879 perfons.

HEMPFIELD. Add—The former contains 3431, and the latter 3444 inhabitants.

HENDERSON, in Kentucky, l. 2, *r.* 4544; l. 3, *r.* 1467. At the clofe, add—containing 159 perfons, of whom 47 were flaves in 1810.

HENLEY-*upon-Thames*, l. *ult.* *r.* 1811—522—3117.

HENLEY *in Arden*, l. 5, *r.* 1811—242; l. 6, *r.* 1035.

HENNIKER, a town of Hillfborough county, in New Hampfhire, having 1608 inhabitants.

HENRICO, l. 2, *r.* 9945; l. 3, 4846.

HENRY, l. 4, *r.* 5611 inhabitants, of whom 1755 were flaves in 1810; l. 6, *r.* 6652 inhabitants, of whom 1103 were flaves.

HEPATICA, in *Botany*, fo named by the earlier botanifts and phyficians, from a refemblance in the lobes of the leaves to thofe of the human liver, is reftored as a diftinct genus from ANEMONE, (fee that fupplementary article,) by profeffor De Candolle, in his Syft. v. 1. 215, merely becaufe the *involucrum* is placed very near to the flower, (fome have thought it an actual perianth), and its leaves undivided. We hefitate to follow our learned friend in this meafure, the certain fpecies of *Hepatica* being fcarcely more than one or two, fo that nothing is gained as to convenience, nor is the character very decifive. Thefe fpecies are,

1. H. *triloba.* Common Hepatica. (Anemone Hepatica; Linn. Sp. Pl. 758. Sm. Fl. Græc. Sibth. t. 513, unpublifhed. Fl. Dan. t. 610, not 612.)—Leaves heart-fhaped, with three entire lobes.—Native of Europe and North America. A common hardy garden plant, with blue pink, or white, fingle or double, very early, bloffoms. The fynonyms are numerous. De Candolle by a cafual error cites Engl. Bot. t. 51.

2. H. *angulofa.* Angular, or Serrated, Hepatica. Lamarck Dict. v. 1. 169.—Leaves palmate, with five ferrated lobes. Cultivated formerly at Paris, but now loft. It is much to be wifhed that we could learn more concerning this plant.

3. H. *integrifolia,* with ovate entire leaves and very hairy ftalks, found by baron Humboldt in South America, is not clearly an *Hepatica.*

HEPATITE. See MINERALOGY, *Addenda.*

HERAT. Add—The ancient *Aria* or *Artacoana*, capital of Ariana; l. 4, after name, infert—or Herirood; l. 5, after which, add—gives fertility to the plain, 30 miles long and 15 broad, upon which Herat is fituated, and which,

which, though surrounded with lofty mountains, is highly cultivated, and covered with villages and gardens. The Herat, or Herirood, afterwards runs, &c.; l. 5, for It r. Herat embraces an area of four square miles, and, &c.; l. 6, add—This castle is of a square form, elevated on a mound, flanked with towers at the angles, and built of burnt brick. The city has a gate in each face, and two in that which fronts the north, and from each gate a spacious and well-supplied bazaar leads up towards the centre of the town. It is well supplied with water, every house almost having a fountain independent of those that are public on either side of the bazaars:—l. 23, add—The residence of the prince is a mean building, having a gallows in the centre of the square, which is situated in its front; and the chief mosque, once a noble edifice, enclosing an area of 800 square yards, is falling into decay. Herat is computed to contain 100,000 inhabitants, 10,000 being Patans, and the rest Afghans, a few Jews, and 600 Hindoos, the last-mentioned of whom are highly respected, and they only possess capital or credit; hence they derive a very considerable influence. The trade of this city, as we have already said, is extensive, and accordingly it is the emporium of the commerce carried on between Cabul, Cashmere, Bucharia, Hindoostan, and Persia. From the former, they receive shawls, indigo, sugar, chintz, muslin, leather, and Tartary skins, which they export to Meshed, Yezd, Kerman, Ispahan, and Tehraun, receiving in return chiefly dollars, tea, china-ware, broad-cloth, coffee, pepper, and sugar-candy; dates and shawls from Kerman and carpets from Ghaen. The staple commodities of Herat are, silk, coffee, and assafœtida, which are exported to Hindoostan. The gardens are full of mulberry-trees, cultivated merely for the sake of the silk-worm, and the adjoining plains produce assafœtida. The winters here are very severe, and the cold often injures the crops; but the fertility of the plain is such that it affords an immense produce both of wheat and barley, and almost of every kind of fruit known in Persia. The cattle are small, but not plentiful, and the broad-tail sheep are abundant. The revenue of this city is estimated at $4\frac{1}{2}$ lacs of rupees. The prince in possession pays a tribute to his Persian majesty of 50,000 rupees a year. N. lat. 34° 12′. E. long. 63° 14′.

HEREFORD. At the close, add—By the return of 1811, Hereford contains 1583 houses, and 7306 inhabitants.

Hereford, a township of Berks county, in Pennsylvania, having 1140 inhabitants.

HEREFORDSHIRE, col. 2, l. 7 from bottom, *r.* 1811—18,572—94,073.

HERKIMER, a county of New York, containing 22,046 inhabitants, of whom 64 are slaves.

HERMINIUM, in *Botany*, a name by which Linnæus its author seems, in Phil. Bot. 171, to allude to Hermes, or Mercury, but without any explanation.—Linn. Gen. ed. 1. 271. Br. in Ait. Hort. Kew. v. 5. 191. Sm. Compend. ed. 2. 130.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx spreading. Petals three-lobed, like the lip, which has no spur. Anther fixed, nearly terminal.

1. H. *monorchis*. Musk Herminium. (Ophrys monorchis; Linn. Sp. Pl. 1342. Engl. Bot. t. 71.)—"Radical leaves two, lanceolate."—Native of chalky pastures in Europe. A small plant, with yellowish musky-scented *flowers*. No genus is better defined, but we know nothing of any other species indicated by Mr. Brown's specific character.

HERO, *North*, l. 2, of Grand Isle county; l. 3 and 4, *r.* 1810—552.

Hero, *South*, l. 3, *r.* 826; l. *ult.* *r.* 623.

HERRIOT. See Hariot.

HERTFORD, col. 2, l. 13 from the bottom, *r.* 1811—3900; l. 12, 2038—1862; l. 11, *r.* 592.

Hertford, in America, l. 2, *r.* 6052—2805.

HERTFORDSHIRE, col. 2, l. 28 and 29, *r.* 1811—20,345—111,654—55,023—56,631.

HESUS, in *Mythology*. See Druids.

HEXHAM, l. 4. In the year 1811, Hexham parish, divided into four wards, or townships, comprehended 478 houses, and 3518 persons; and Hexham shire, including four quarters or townships, had 251 houses, and 1328 persons.

HEYNE, Christian Gottlob, in *Biography*, was born at Chemnitz, in September 1729, and rose from humble life, after struggling with many difficulties, on account of the penury of his condition, to an eminent rank, as a critical scholar and philologist. Although his parents were hardly able to derive a scanty subsistence from their labour, he was sent to school, and made such proficiency in learning, that in his tenth year he was able by teaching others to defray the expences of his own education, and by the assistance of a neighbouring clergyman, he entered himself at a grammar-school; and having acquired a competent knowledge of the Latin and Greek languages, he was sent to the university of Leipsic. Private teaching, however, was his resource for further supplies, and thus furnished he devoted himself to the profession of the law; and industrious in his study of the Roman law and history, he was qualified for reading lectures, which were much approved, on the Roman antiquities. Under the patronage and recommendation of count Bruhl, the Saxon minister, which he obtained by a Latin elegy, he was invited to Dresden, whither he repaired in 1752 with flattering expectations, which were eventually disappointed; so that he was reduced to a state of indigence and distress, without the means of providing either food or lodging. At length necessity compelled him to become a writer, and by one of his performances as a translator of a Greek romance, he acquired that taste for criticisms which raised him to that eminence in this department of literature which he afterwards occupied. His next work was an edition of Tibullus, which was followed in 1756 with his first edition of Epictetus. But his prospects, which appeared promising in consequence of his access to the Bruhlean library, were again precluded by the incursion of the Prussians into Saxony, which occasioned the sudden removal of count Bruhl from Dresden, and the dispersion of his library. After some changes of situation, he repaired to Dresden in the year 1760; and in the following year married a lady, named Theresa Weiss, to whom he had for some time been affectionately attached. In 1763 he was invited to Gottingen to supply the vacant professorship of John Matthias Gesner. The subjects of his first academic lectures were, Horace, the Georgics of Virgil, and some parts of the Tragic writers. In 1766 he explained the Iliad, and afterwards the Greek antiquities. His leisure hours, after his first settlement at Gottingen, he employed as a writer and translator. Having been appointed, in 1763, first librarian to the university, he obtained, in 1770, the title of aulic counsellor, and became secretary to the Royal Society of Sciences, and editor of the Literary Gazette. In 1771, he collected the papers presented to the society for sixteen years, which had been neglected, and published the first volume of the "Commentarii Novi," which was dedicated to the king. The first edition of his Pindar appeared in 1773. His "Catalogue of the Library," begun in 1777, was completed in 1787, and extended to about 150 volumes in folio. But his opus majus, on which he he beftowed the greateft part of his attention and time, was his edition of Homer, which he began in 1787, and which was prefented to the public in 1802. A fecond edition of his Virgil appeared in 1788; in the revifal and improvement of which he derived great affiftance from his literary friends, particularly Van Santan in Holland, and Jacob Bryant in England. During the autumn of this year, he made a tour to Switzerland, and formed an acquaintance with feveral of the moft eminent literary characters in that country; and on his return he was offered the place of chief librarian at Drefden, and a profefforfhip at Copenhagen, both which he declined. The principal object of his attention was the Royal Society of Gottingen, of which he was fecretary; and which was enlarged by the admiffion into the number of its members of feveral French literati. By means of his reputation and influence, he preferved the fociety, in 1803, from the miferies incident to a ftate of war, and from any moleftation on the part of the French army. After a tour to Arnftadt in 1806, on a vifit to one of his daughters recently married, his infirmities increafed, fo that in 1809 he refigned his office as profeffor of eloquence. In 1810 he was made a knight of the Weftphalian order of the crown, and died in the month of July 1812. Few perfons have been more diligent in the improvement of their time than Heyne, or devoted more time in the day to literary occupations, without fecluding himfelf from domeftic and focial enjoyments. He was twice married; by his firft wife he had one fon and two daughters, one of whom was married to George Forfter, fon of the celebrated Dr. John Reinhold Forfter, and on his death to Mr. Huber. By his fecond wife, who was daughter of George Frederick Brandes, aulic counfellor, he had two fons and four daughters. His works were too numerous for recital within our limits. We refer for an account of them to the General Biography, Appendix.

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HICKMAN, in *Geography*, a town of Weft Tenneffee, containing 2583 perfons.

HICKUP, l. 7, add—See Lungs.

HIETANS, the name of a people of North America, who traverfe a region extending from the limits of the ftate of Louifiana to the Rio Gila, and to the eaftern declivity of the Californian coaft, within a fhort diftance of the fhores of the Pacific ocean. In following the herds of buffaloe, which change their pafture with the feafons, they refemble the wandering tribes of Tartars and Arabs, who have no fettled refidence. Encamped where they find water and their prey, they remain as long as they can obtain a fupply. The Hietans have domefticated the horfe, and vie with the moft civilized people in their management of this ufeful animal, in mounting it and applying its force to the purpofes of chace or war. They are the only people, aborigines of this continent, who feem to have acquired the ability to withftand the fhock of cavalry furnifhed with the principles of European tactics.

HIGHAM Ferrers, col. 2, l. 8, *r.* 1230, and 6627.

HIGHGATE, in America, l. 3, *r.* 1374.

HIGHWORTH, col. 2, l. *ult.* *r.* Highworth parifh, in 1811, contained 480 houfes, and 2514 inhabitants.

HILLSBOROUGH, in America, l. 6, *r.* 49,249; l. 11, *r.* 1592.

HILLTOWN, l. 4, *r.* 1335.

HINEKLEY, col. 2, l. 5 from bottom, *r.* 1811—6098, and 1097.

HINDON. Add—By the returns of 1811, the borough and parifh contained 170 houfes, and 781 perfons.

HINDSDALE, a town of Berkfhire, in Maffachufetts, containing 822 inhabitants.

HINESBURGH, a town of Chittenden county, in Vermont, having 1238 perfons.

HINGHAM, l. 3 and 4, *r.* 241—1263.

Hingham, l. 1, *r.* Plymouth for Suffolk; l. 7, *r.* 2382.

HINSDALE, l. 4, *r.* 740.

HIRAN, l. 2, *r.* Oxford for York, and 336; add—Alfo, a townfhip of Ohio, in Portage county, having 171 inhabitants.

HIRUNDO. At the clofe, for Swallow *r.* Migration.

HITCHIN, l. *ult.* *r.* 1811, the hundred of Hitchin and and Pirton contained 1529 houfes, and 7732 inhabitants.

HOCKSTETT. Add—See Battle.

HOCKING, a town of Fairfield county, in Ohio, having 1078 inhabitants.

HODSON, a townfhip of Portage county, in Ohio, having 793 inhabitants.

HOLDEN, l. 3, *r.* 1072.

HOLDERNESS, l. 4, *r.* 835.

HOLLAND, in America, l. 4, *r.* 420. Add—Alfo, a town of Orleans county, in Vermont, having 126 inhabitants.

HOLLES, l. 4, *r.* 1529.

HOLLISTON, l. *ult.* *r.* 1810—989.

HOLLOW Spar. See Mineralogy, *Addenda.*

HOLLY, *Mount*, in *Geography*, a town of Rutland county, in Vermont, having 922 inhabitants.

HOLOCENTRUS, in *Ichthyology*, a genus of the Thoracici order of fifhes; the characters of which are, habit of the genus Perca; gill-covers fcaly, ferrated, and aculeated; and fcales, in moft fpecies, hard and rough. The fpecies enumerated and defcribed by Dr. Shaw are as follow: *viz.*

1. *With forked or lunated tail.*

Sago. Silvery-red H. with longitudinal yellow lines on each fide, very beautiful, about a foot long, refembling a carp, but of a more fquare form, and becoming fuddenly flender near the tail, eyes large and gold-coloured, fcales large, and denticulated at the edges. Native of the Indian, American, and Mediterranean feas, and held in high eftimation for the table.

Schraetser. Brownifh H. with four longitudinal black lines on each fide, filvery abdomen and naked head; the *perca* fchraetfer of Gmelin's Linnæus. Native of the Danube, and of its tributary ftreams, efteemed for food.

Radula. H. with the body lineated with white fpecks; P. radula of Gmelin's Linnæus. Native of India.

Gaterina. Blueifh H. with black fpecks and fcattered fpots; Sciæna gaterina of Gmelin's Linnæus. Native of the Arabian feas, varying in fize and colours.

Virescens. Greenifh H. with tranfverfe dorfal femidecurrent olivaceous bands, and head ftreaked with yellow. Native of the Indian feas.

Quinquilineatus. Yellowifh H. with brownifh back, and body marked on each fide by five longitudinal blue lines. Native of Japan.

Bengalensis. Subfulvous H., filvery beneath, and marked on each fide of the upper part by five longitudinal blueifh bands, margined with black. Native of Bengal.

Tigrinus. White H. with the body tranfverfely banded, and fins fpotted with black. Native of the Indian feas, and efteemed for the table.

Decussatus. White, with brown back, and body marked by by two longitudinal and seven transverse brown bars. Native of the American seas.

Striatus. Subluteous H. with brownish back, body marked by transverse brown bands, dorsal fin ramentose behind, and marked by a black spot. Native of unknown regions.

Argentinus. Brownish H. with silvery sides. Native of regions unknown.

Niger. Black H. with extremely minute scales: found about the coast of Cornwall.

Acerinus. With fourteen soft and seventeen spiny rays in the dorsal fin; perca acerina of Gmel. Linn. Native of the Euxine sea, and esteemed as food.

Cærulescens. Blueish H. with all the fins yellow. Native of the Indian seas.

2. *With undivided or rounded tails.*

Variegatus. Red H. with seven transverse black lines, and the head and abdomen varied with blue streaks: perca marina of Linn. Gmel. Native of the Mediterranean and northern seas.

Cottoides. With all the fins marked by two speckled lines. Native of the Indian seas.

Philadelphicus. Perca philadelphica of Linn. Gmel.

Gigas. Ochraceous H. with brown clouds, three-spined gill-covers, and eleven dorsal spines: perca gigas of Linn. Gmel. Native of the Mediterranean.

Forskalii. Red H. with four broad transverse whitish bands: perca fasciata of Linn. Gmel. Native of the Red sea.

Tauvinus. Linear-oblong H. with blackish ferruginous spots: perca Tauvina of Linn. Gmel. Native of the Arabian seas.

Ongo. Brown H. with the body marked transversely by elongated spots, and the dorsal, anal, and caudal fins spotted with yellow. A native of Japan.

Auratus. Gold-yellow H. with red specks. Native of the East Indies.

Quadrilineatus. Silvery H. with brownish back, and body marked above by four longitudinal black lines on each side. Native of the East Indies.

Fasciatus. Green-yellowish H. with transverse brown bands divided beneath. Native of a region unknown.

Punctatus. Yellow H. sprinkled over with black spots and red points. Native of the Brasilian seas.

Calcarifer. Subargenteous H. with brownish back, large scales, and spotted gill-covers. Native of Japan.

Surinamensis. Brownish H. with subluteous clouds, red head, and anterior gill-covers spine-ciliated. Native of Surinam.

Afer. Oblong-ovate brown H. with small scales and short tail. Native of the coasts of Guinea, in high estimation for food.

Japanicus. Red H. with small scales, and blue and yellow irides. Native of Japan.

Merra. White H. spotted on all parts with brown. Native of the Japanese seas.

Testudineus. Subluteous H. with slightly branching brown bands, blue-striped gill-covers, and blackish fins. Native of the northern seas.

Marginatus. Blueish H. with brownish back, red fins, and dorsal fin edged on the fore-part with black. Native place unknown.

Sonneratii. Yellowish H. with three transverse silvery bands, edged with brown. Native of the Indian seas.

Lanceolatus. Silvery H. transversely banded with brown, and with the dorsal, anal, and caudal fins sublanceolate. Native of the East Indies.

Cæruleo-punctatus. Blueish H. with pale yellow clouds, and deep-brown fins spotted with blue. Native country unknown.

Bicolor. Blueish H. with irregular white spots. Shaw's Zoology, vol. iv. pt. ii.

HOLT, l. 7, *r.* 216—1037.

Holt, l. 1, for Grefford *r.* of the same name; l. *ult.* *r.* 1811—161—813.

HOLYHEAD, l. 5 from last, *r.* 1811—539—3005.

HOLYWELL. In 1811, the town of Holywell contained 1313 houses, and 6394 persons; *viz.* 2925 males, and 3469 females: 117 families being employed in agriculture, and 752 in trade, manufactures, and handicraft.

HOMER, col. 2, l. 23, for Cos *r.* Jos.

HONEY Brook, a township of Chester county, in Pennsylvania, containing 1073 inhabitants.

HONITON, l. 16, after act, add—in the borough and parish; l. 17, *r.* 581 and 2735.

HOPE, col. 2, l. 13, add—Also, a town of the district of Maine, in the county of Lincoln, having 787 inhabitants.

HOPEA, in *Botany*, a fourth genus, (see our former Hopea,) thus inscribed, in Roxb. Corom. v. 3. 7. t. 210. is very nearly allied to Dipterocarpus, (see that article,) though different in the aspect of the flowers.

HOPEWELL, l. 5, after York, having 1577; after Huntingdon, 805; after Washington, 2193; l. 8, *r.* 1810; l. 9, *r.* 2565; l. 10, add—containing 1987 inhabitants.—Also, a township of Fairfield county, in Ohio, having 478 inhabitants.

HOPKINS, a county of Kentucky, having 2927 inhabitants, of whom, in 1810, 404 were slaves.

HOPKINTON, l. 2, *r.* 1345; l. 8, *r.* 1774.

HOPS, col. 10, l. 28, *r.* 3250.—*Laws relating to*, l. 5, insert—See also 45 Geo. III. c. 94. 49 Geo. III. c. 98. and the duties that are imposed on hops.

HORNBLENDE. See Mineralogy, *Addenda*.

Hornblende *Slate*. See Mineralogy, *Addenda*.

HORNSEY, l. *ult.* *r.* In 1811, the parish consisted of 147 houses, and 704 inhabitants.

Hornsey, l. 12 and 13, *r.* 1811—807, and 3349.

HORN-STONE. See Mineralogy, *Addenda*.

HORSE, col. 11, l. 22, *r.* 2*s.* 10*d.* Col. 12, l. 25 from bottom, *r.* 22*l.* 10*s.*; l. 21, *r.* 11*l.* 5*s.*; add—On the subject of duties on horses, see Tax.

HORSHAM, l. 32, *r.* In 1811, the borough contained 287 houses, and 1714 inhabitants; and the whole parish, including the borough part, contained 622 houses, and 3839 inhabitants.

Horsham, in America, l. 2, *r.* 938.

HOSPITAL, Bridewell, col. 2, l. 18, *r.* which exceeded the receit by, &c.

HOVEA, in *Botany*, in memory of Mr. Pantaleon Hove. (See Poiretia.)—Br. in Ait. H. Kew. v. 4. 275. (Poiretia; Sm. Tr. of L. Soc. v. 9. 304.)—Class and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Ess. Ch. Calyx two-lipped; upper lip cloven, abrupt. Stamens all connected. Keel obtuse. Legume sessile, roundish, tumid. Seeds two crested.

H. linearis, (very near *H. lanceolata*, Curt. Mag. t. 1624,) a linear-leaved *shrub*, with blueish-purple *flowers*, and smooth *legumes*; and *H. longifolia*, whose *leaves* are longer, and *legumes* downy, are the only species in Hort. Kew., both natives of New South Wales. Our *P. elliptica*, L. Tr. v. 9. 305 may be doubtful.

HOUGHTON-LE-SPRING, in *Geography*, a townſhip in a pariſh of the ſame name, and in Eaſington Ward, in the county of Durham. In 1811, it contained 221 houſes, and 1356 perſons; *viz.* 663 males, and 693 females: 44 families being employed in agriculture, and 68 in trade and manufacture. The pariſh includes 18 townſhips.

HOWARD, a townſhip of Centre county, in Pennſylvania, having 761 inhabitants.

HOWDEN. In 1811, this townſhip contained 314 houſes, and 1812 perſons; *viz.* 830 males, and 982 females.

HOWELL, a townſhip of Monmouth county, in New Jerſey, having 2780 inhabitants.

HUBARDTON. See HUBBARTON.

HUBBARD, a townſhip of Ohio, in Trumbull county, having 674 inhabitants.

HUBBARDSTON, l. 3, *r.* 1127.

HUBBARTON, or HUBARDSTON, l. 2, *r.* 734.

HUDDERSFIELD, l. 27, *r.* 1811—1871—9671.

HULL, col. 5, l. 9 from bottom, *r.* 1811; l. 8, 4611; l. 7, 26,792—11,998—14,794.

HULL, in America, l. 1 and 2, for Suſſex *r.* Plymouth; l. 3, *r.* 132.

HUMITE. See MINERALOGY, *Addenda*.

HUMMOCK, l. 12 from bottom, *dele* the reference (ſee that article).

HUMOURS *of the Eye, Chemical Properties of.* See EYE.

HUMPHRIES, in *Geography*, a county of Weſt Tenneſſee, having 1511 perſons, of whom 132 were ſlaves in 1810.

HUNGARY, col. 2, l. 33, after inhabitants (in 1810, 7398, 104).

HUNGERFORD, l. 2 from bottom, *r.* 1811—167—943.

HUNTINGDON, col. 3, two laſt lines, *r.* 1811—522—2397—450.

HUNTINGDON, in America, l. 7, *r.* 16,778; l. 14, *r.* 476; after Philadelphia, add—the townſhip contains 1698 perſons; l. 22, *r.* 2770.

HUNTINGDON, *North, South*, and *Eaſt*, three townſhips, &c. the former containing 2345, the ſecond 1656, and the laſt 1267 inhabitants.

HUNTINGDON, a townſhip in Luzerne county, in Pennſylvania, having 1114 inhabitants.—Alſo, a townſhip of Adams' county, in the ſame ſtate, having 1014 inhabitants.—Alſo, a townſhip of Adams' county, in Ohio, containing 1375 perſons.

HUNTINGDONSHIRE, l. 14, *r.* 7566 houſes, 42,208 inhabitants; 20,402 males, 21,806 females.

HUNTINGTON, l. 3, *r.* 514.

HUNTINGTON, in Connecticut. See HUNTINGDON.

HUNTSBURG, l. 3, *r.* 714.

HURD, *Richard*, in *Biography*, an eminent Engliſh prelate, was the ſon of a reputable farmer, in the pariſh of Teterſhall, in the county of Stafford, and born in January 1719-20. After a preparatory ſchool-education, he was ſent to Emanuel college in the univerſity of Cambridge, where he was graduated M.A., and was elected a fellow in 1742. In 1744 he received prieſt's orders. As a writer, he began his career by an anonymous work, which was, "Remarks on a late Book, entitled an Enquiry into the Rejection of the Chriſtian Miracles by the Heathens, by William Weſton, B.D. &c.;" and which was highly commended by Dr. Warburton. As a literary critic, he firſt laid the foundation of his future fame in 1749, by an anonymous publication, entitled "Horace's Epiſtles to the Piſos, with an Engliſh Commentary and Notes;" and alſo of his fortune by a compliment paid in the preface to Warburton, whom he afterwards reſembled, not only in his advancement, but in his mode of thinking and of writing. By his recommendation to Biſhop Sherlock, he was appointed, in 1750, one of the Whitehall preachers. In 1751, he publiſhed a "Commentary on Horace's Epiſtle to Auguſtus," reſembling in learning and ingenuity his former commentary. Both theſe Commentaries were reprinted in 1753, with two diſſertations on dramatic poetry and poetical imitation. This volume was dedicated to Warburton in a high ſtyle of panegyric; and it was followed, in 1755, by a piece, entitled "Delicacy of Friendſhip," in which the anonymous author, known to be Hurd, paid homage to his patron by an attack on Dr. Jortin, who, in his "Six Diſſertations," had not treated Warburton with that reſpect to which, in the eſtimation of his admirers, he was thought to be entitled. By this pamphlet he gained no reputation, and it is ſaid, that in conſequence of ſome remarks on his ſubſervient diſpoſition, he was deſirous of ſuppreſſing it, though it has been ſince reprinted in a late edition of his works. His firſt church preferment was a college living at Thurcaſton in Leiceſter, to which he was inducted in 1756, and here he lived for ſeveral years in retirement. Soon after Hume's "Eſſay on the Natural Hiſtory of Religion" was publiſhed, a pamphlet of "Remarks" upon it appeared, of which Hurd was thought to be the author, and which Hume notices in the following terms: "Dr. Hurd wrote a pamphlet againſt this work, with all the illiberal petulance, arrogance, and ſcurrility which diſtinguiſh the Warburtonian ſchool." Theſe Remarks have been thought to be the joint production of the maſter and diſciple. Hurd's "Letter to Mr. Maſon on the Marks of Imitation," publiſhed in 1757, is repreſented by his biographer as "one of the moſt agreeable and ingenious of the writer's works on elegant criticiſm." Our author's "Moral and Political Dialogues," which appeared in 1759, contributed to the increaſe of his literary reputation; and thoſe in particular that relate to the Engliſh conſtitution evince the writer's attachment to Whig principles. In 1762 appeared, without his name, an amuſing work, entitled "Letters on Chivalry and Romance," 12mo.; and in 1764 was publiſhed another dialogue on "The Uſes of Foreign Travel." The ſeveral dialogues now recited were publiſhed in 1765, in 3 vols. 8vo. introduced with a preface on the manner of writing dialogue. The defence of his patron and friend had in the mean time occaſioned a "Letter to the Rev. Dr. Leland of Dublin College;" in which he vindicates Warburton's idea of an inſpired language, ſtated in his "Doctrine of Grace."

Hurd's preferments in the church had not correſponded to his growing literary fame; but in 1765 he was recommended by biſhop Warburton and Mr. C. York to the office of preacher at Lincoln's-Inn; and in 1767 he was collated by the biſhop to the archdeaconry of Glouceſter. In the following year, he was graduated D.D. at Cambridge, and appointed to preach the lectures on prophecy, eſtabliſhed at Lincoln's-Inn by Warburton; theſe were compriſed in twelve diſcourſes, which formed a volume of highly valuable theological literature, publiſhed in 1772, 8vo. with his explication of the double ſenſe of prophecy, called by him "a divine artifice." With that exceſs of ingenuity which in ſome caſes ſeems to derogate from the ſimplicity of the goſpel, ſome have been diſſatisfied. Having eſtabliſhed his reputation both as an elegant writer and an ingenious theologian, Dr. Hurd was promoted without ſolicitation to the ſee of Lichfield and Coventry in 1775; and in his firſt charge to the

the clergy of his diocefe, the fubject to which he directed their attention was the excellence of the liturgy, inculcating at the fame time the duty of fubmitting all alterations to the wifdom of the church, and thus guarding againft that difpofition to reform which was manifefting itfelf among thofe who formed a confiderable party pertaining to the eftablifhment.

In the following year, the learned prelate had the honour of being preceptor to the Prince of Wales and his brother the duke of York. In the fame year, he publifhed a volume of fermons preached at Lincoln's-Inn; to which, in 1780, he added two additional volumes, containing a variety of elegant difcourfes, orthodox with regard to their theology, and conformable to the articles of the church, which he profeffes highly to venerate. His tranflation to the fee of Worcefter took place in 1781, when he was alfo nominated clerk of the clofet; and though he was offered the primacy in 1783, he declined the acceptance of this high dignity. In his retired ftation at the epifcopal feat of Hartlebury, he paffed the remainder of his life in attending to the concerns of his diocefe, purfuing his literary avocations, and collecting a noble library, which he bequeathed as an heir-loom to the fee of Worcefter. Of his minor publications, both before and after this period, we fhall take no notice; but content ourfelves with mentioning his edition of the works of his efteemed friend the bifhop of Gloucefter, prefented to the public in 7 vols. 4to. in 1788; adding afterwards, *viz.* in 1794, an account of the life, writings, and character of the author. With this performance he terminated his literary labours; and after a gentle and eafy decline, he expired, in his fleep, in May 1808, four months after the completion of his 88th year. The literary character of this prelate may be duly appreciated by a perufal of his writings; but with refpect to his private character and conduct, we fhall adopt the opinion and language of a candid biographer, who fays of him, "if a fair abatement be made on account of fome literary arrogance and acrimony, probably derived from the fame fource," (referring to familiarity with the writings of Warburton,) "they will merit unqualified praife. His ftrict regard to decorum, his liberal courtefy, his warmth of friendfhip, his moderation and difintereftednefs, rendered him equally an object of regard and efteem." Gen. Biog.

HURON, in *Geography*, a town of Cayahuga county, in Ohio, having 424 inhabitants.

HUTCHINSIA, in *Botany*, dedicated to the memory of the late Mifs Hutchins, of Ballylickey, near Bantry, in Ireland, a moft intelligent cryptogamic botanift.—Br. in Ait. Hort. Kew. v. 4. 82. Sm. Compend. 98.—Clafs and order, *Tetradynamia Siliculofa*. Nat. Ord. *Siliquofæ*, Linn. *Cruciferæ*, Juff.

Eff. Ch. Pouch entire; valves tumid. Seeds two in each cell. Filaments fimple.

1. H. *rotundifolia*. Round-leaved Hutchinfia. Ait. n. 1. (Iberis rotundifolia; Linn. Sp. Pl. 905. Scop. Carn. t. 37.) —Leaves undivided.—Native of mountains in the fouth of Europe. *Flowers* rofe-coloured.

2. H. *alpina*. Alpine Hutchinfia. Ait. n. 2. fee Lepidium *alpinum*.—Leaves pinnatifid. Petals twice as long as the calyx. Style fhort.

3. H. *petræa*. Rock Hutchinfia. Sm. n. 1. fee Lepidium *petræum*.—Leaves pinnatifid. Petals fhorter than the calyx. Stigma feffile.

HYÆNANCHE. See Toxicodendrum.

HYALITE. See Mineralogy, *Addenda*.

HYDE, l. 4, *r.* 6029—1882.

HYDEPARK, l. 2, *r.* 261.

HYDRIODATES, Hydriodic *Acid*, in *Chemiftry*. See Simple *Bodies*.

HYDROCHLORIC Acid. See Muriatic *Acid*, and Chlorine.

HYDROCYANIC Acid. See Cyanogen and Prussic *Acid*.

HYDROGEN. For the recent determinations refpecting the fpecific gravity, &c. of this gas, fee Atomic *Theory*.

Hydrogen, *Arfenical*. See Arsenic.

Hydrogen, *Boruretted*, the name of a gafeous compound of hydrogen and boron. The exiftence of fuch a gas, however, feems fomewhat uncertain. Dr. Thomfon thinks Gmelin fucceeded in forming it by mixing together four parts of iron-filings, and one part of boracic acid, and expofing the mixture to a ftrong heat for half an hour. When this fufed mafs was diffolved in muriatic acid, an effervefcence took place, and a gas, fuppofed to be boruretted hydrogen, was extricated; but it was not fatisfactorily examined. Sir H. Davy endeavoured in vain to unite boron with hydrogen by heating them together.

HYDROGURET *of Carbon, Phofphorus, and Sulphur*, the names by which fome have chofen to diftinguifh compounds of hydrogen with thefe refpective fubftances, and which were formerly called *carburetted*, *phofphuretted*, and *fulphuretted hydrogen*.

HYDROPHILUS. At the clofe, add—The genus hydrophilus, like that of dytifcus, has been greatly increafed by the perfevering refearches of modern entomologifts. Mr. Marfham enumerates twenty-eight Britifh fpecies.

HYDROPHOSPHORIC *Acid*, Hydrosulphuric *Acid*, Hydrothionic *Acid*, in *Chemiftry*, names which have been given, the firft to *phofphuretted hydrogen*, the two laft to *fulphuretted hydrogen*.

HYGROMETRY, col. 13, l. 22, add—Mr. Leflie's improved hygrometer is compofed of a tube of ivory, containing quickfilver, with a glafs tube adapted to it, to which a fcale of equal parts is attached. When the ivory yields moifture to the air, which it does according to the drynefs of the atmofphere, it contracts, and preffes the quickfilver higher in the tube;—when it imbibes moifture from damp air, it fwells, and allows the quickfilver to fubfide. Mr. Leflie finds, however, that thefe variations do not correfpond with the real meafures of atmofpheric drynefs or humidity: near the point of extreme dampnefs, they are much augmented; while they diminifh rapidly towards the other extreme. The addition of another fcale, therefore, correfponding to this inequality, is neceffary; and even with this, it cannot be regarded as either an accurate or delicate inftrument.

There are other circumftances, fays the profeffor, connected with evaporation, on which an hygrometer may be conftructed; particularly the dilatation imparted to the air by the vapour, and the depreffion of temperature produced on the humid furface.

On the firft of thefe he has invented an hygrometer confifting of a fmall tumbler, the mouth flat, having a hole ground through the bottom, in which is cemented a flender recurved tube, like a fyphon, containing a portion of coloured oil. A few drops of water being put on a glafs plate, and the tumbler being flipped upon this, the included air diffolves moifture proportional to its drynefs; and the increafed elafticity, thus communicated to the air, caufes the column of oil in the tube to afcend. This inftrument, however, requires addrefs in its management, which renders it difficult to obtain with it refults perfectly precife.

On the other principle, Mr. Leflie has conftructed what he he regards as the moft accurate hygrometer. It is a happy application of the differential thermometer. One of the balls is coated with fine cambric paper, and the paper is moiftened with pure water. Evaporation takes place; and, from the cold which accompanies this, the liquid falls in the oppofite ftem. The extent of its defcent is meafured by the fcale attached. This indicates the degree of cold; this, again, the extent of evaporation; and this, laftly, indicates the relative drynefs of the air, the evaporation being proportionally greater as the air is more free from moifture. The full effect is very foon obtained—generally in about two minutes; and it continues permanent under the fame circumftances, as long as moifture is fupplied to the covered ball.

This ingenious author obferves, in confequence of experiments adapted to the purpofe, that the condition of the atmofphere, with regard to drynefs, is extremely variable.

In our climate, the hygrometer will, during winter, mark from 5 to 25 degrees; but, in the fummer months, it will generally range between 15 and 55 degrees, and may even rife, on fome particular days, as high as 80 or 90 degrees. In thick fogs, the inftrument ftands almoft at the beginning of the fcale: it commonly falls before rain, and remains low during wet weather; but it mounts powerfully in continued tracts of clear and warm weather. The greateft drynefs yet noticed was at Paris, in the month of September, when it reached to 120 degrees. But for want of obfervations, we are totally unacquainted with the real ftate of the air in the remote and tropical climates.

When the indication of the hygrometer does not exceed 15 degrees, we are directed by our feelings to call the air damp; from 30 to 40 degrees we begin to reckon it dry; from 50 to 60 degrees we fhould account it very dry, and from 70 degrees upwards we might confider it as intenfely dry. A room is not comfortable, or perhaps wholefome, if it has lefs than 30 degrees of drynefs; but the atmofphere of a warm occupied apartment will commonly produce an effect of upwards of 50 degrees.

Mr. Leflie has invented another inftrument, which gives indications of the quantity of evaporation from a humid furface in a given time—which he has named the atmometer. It confifts of a thin ball of porous earthen-ware, two or three inches in diameter, with a fmall neck, to which is cemented a long and rather wide tube, bearing divifions, each of them correfponding to an internal annular fection, equal to a film of liquid that would cover the outer furface of the ball, to the thicknefs of the thoufandth part of an inch. To the top of the tube is fitted a brafs cap, having a collar of leather, which, after the cavity has been filled with diftilled or boiled water, is fcrewed tight, to prevent the tranfudation of the liquid from being fo copious as to drop from the ball. Evaporation of the water takes place from the external furface, the inftrument being fufpended in the air; and the quantity evaporated in a given time, is difcovered by the defcent of the liquid in the tube. The ufe of this inftrument will require fome dexterity, particularly in adjufting the preffure of the collar; and its indications are flow,—but it may often be employed with advantage, where it is of importance to afcertain the actual rate of exhalation.

From a variety of obfervations on the fubject of evaporation he infers, that air has its drynefs doubled at each rife of temperature, anfwering to 15 centefimal degrees. Thus, at the freezing point, air is capable of holding a portion of moifture reprefented by 100 degrees of the hygrometer; at the temperature of 15 centigrade, it could contain 200 fuch parts; at that of 30, it might diffolve 400; and at 45 on the fame fcale 800. Or, if we reckon by Fahrenheit's divifions, air abfolutely humid holds, at the limit of congelation, the hundred-and-fixtieth part of its weight of moifture; at the temperature of 59 degrees, the eightieth part; at that of 86 degrees, the fortieth part; at that of 113 degrees, the twentieth part; and at that of 140 degrees, the tenth part. While the temperature, therefore, advances uniformly in arithmetical progreffion, the diffolving power which this communicates to the air mounts with the accelerating rapidity of a geometrical feries.

The theory of the precipitation of rain, which he founds on this principle, requires, as he fays, the affumption, not merely of the mixture of two maffes of air at different temperatures, faturated with moifture, but the continued contact of two currents of air under thefe conditions; as it is thus only that a fufficient quantity of water will be furnifhed to form that copious precipitation which conftitutes rain. And he adds a calculation, founded on the preceding law, which illuftrates this, and illuftrates exceedingly well, the general theory.

We fhall here take occafion to obferve, that as the capacity of air for heat is increafed by its rarefaction, its difpofition to hold moifture in folution appears to be increafed by the fame caufe; and at the fame time the removal of preffure, which is the confequence of the rarefaction, facilitates the tranfition of water into vapour. From thefe caufes, if the hygrometer be fufpended within a large receiver, from which a certain portion of air is quickly abftracted, it will fink with rapidity. But the effect is only momentary, for the rarefied air foon becomes charged with moifture, and confequently ceafes to act on the wet ball of the thermometer. Hence there is every reafon to believe that the higher regions of the atmofphere are drier than thofe beneath; and, without this condition, Mr. Leflie remarks, our globe muft have been fhrouded in darknefs; for the cold which reigns in the upper ftrata, would have prevented the humidity from afcending to a great elevation, and have precipitated it in continual fogs or clouds. In the actual ftate of things, the diminution of temperature, in afcending, predominates at firft over the augmented power of aqueous folution; and the air becomes damper till a height be reached, at which the oppofite effects of cold and rarefaction are balanced. Above this, which is the proper region of the clouds, the influence of the rarity of the medium exceeds that of the cold, and the air therefore becomes progreffively drier, until it melts away into the clear ethereal expanfe.

On this principle is founded the very beautiful experiment invented by Mr. Leflie, of caufing water to freeze by the cold produced by its own evaporation. The peculiar arrangement for this confifts in placing water in a porous earthen cup, fufpended within the receiver of an air-pump, and placing, at a fhort diftance beneath it, fulphuric acid in a broad fhallow veffel, fo that an extenfive furface of the acid fhall be prefented. On rarefying the air, the evaporation of the water is accelerated, and of courfe the degree of cold produced by that evaporation is increafed. This, however, would foon be checked by the prefence of the watery vapour; but this the fulphuric acid abforbs, almoft as quickly as it is formed; keeps, therefore, the rarefied air always dry; and thus allows the evaporation to proceed with the fame rapidity. The temperature, therefore, continues to fall, until the water fhoots into cryftals of ice; and even after it is entirely congealed, the ice continues to fuffer evaporation, until it wholly difappears. See Leflie's Short Account

Account of Experiments and Inftruments, depending on the Relations of Air to Heat and Moifture, 8vo. Edinb. 1814. Edinb. Rev. N° 48.

HYPERSTONE. See MINERALOGY, *Addenda*.

HYPOPHOSPHOROUS ACID. See PHOSPHORUS.

HYPOSULPHUROUS ACID. See SULPHUR.

HYREUS, in *Ornithology*, a genus of birds of the order Pafferes; the characters of which are, beak conic, ftraight and ferrated; noftrils ovate; tongue fhort and obtufe; feet with three toes, two before and one behind. There is one fpecies, *viz.* H. *Abyffinicus*, or black plant-cutter, with the head, throat, and jugulum red, wing-coverts brown, with white margins. It is found in Abyffinia, and, according to Mr. Bruce, it is a folitary fpecies, and fubfifts on the kernels of almonds and other feeds, which it eafily breaks with its ftrong ferrated beak. It frequents woods, and is called " Guifso batito dimmo-won jerck."

I and J.

JACKSON, l. 2, containing, together with its town Jefferfon, 10,569 inhabitants, the flaves in the county being 1789, and in the town 27; l. 3, *r.* Weft Tenneffee, adding—containing 5401 inhabitants, of whom 481 were flaves in 1810.

JACKSONSBOROUGH, l. 2, after Carolina, add—in Scriven county. At the clofe, add—containing 2663 inhabitants, of whom 2000 were flaves in 1810.

JAFFRAY, l. 4, *r.* 1336.

JAGHIRE, l. 7, after hereditary, add—There are two fpecies of jaghire; one perfonal, for the ufe of the grantee; and the other, in truft, for fome public fervice, commonly for the maintenance of troops.

JAINA, l. *penult. r.* Myfore. Col. 2, l. 32, after Jainas, add—fome fay that; l. 34, after diftinctions, add—others, however, affert, that they have the fame fourfold divifion into claffes or cafts.

JAMAICA, in America, l. 8, after inhabitants, add—Alfo, a town of Windham county, in Vermont, having 996 perfons.

JAMBAVANTA, l. 1, for Sni *r.* Sri; l. 5, for anatara *r.* avatara.

JAMES II. col. 3, l. 16, *r.* 5th.

JAMES *City*, l. 3, *r.* 4094 inhabitants, of whom 2320 were flaves in 1810.

JAMES, *St.* l. 5, after Chefter, add—Alfo, a parifh in the county of Acadia, in the territory of Orleans, containing 3935 inhabitants.

JAMESTOWN. Add—Alfo, a town of Newport county, in Rhode ifland, containing 504 perfons.

JAVA, l. 24, after one, add—(See BANTAM.) At the clofe, add—See Raffles's Java.

JAY, l. 1, for Kennebeck *r.* Oxford; l. 7, *r.* 1107. Add—Alfo, a town of Orleans county, in Vermont, containing 28 inhabitants.

JAYADEVA, l. 5 from the bottom, for practical *r.* poetical.

JAYADEVI, l. 4, for Kari *r.* Kafi; l. 7, for Sina *r.* Siva.

ICE, col. 4, l. 43, add—clouds and frequent changes of wind being certain preventives of its formation; l. 44, Dr. Wells, in his Effay on Dew, &c. has given an account of the procefs defcribed by Mr. Williams, which, from its extent, 300 perfons being employed in it, muft have been carried on for profit, and of courfe would be conducted in the moft economical manner. " A piece of ground, nearly level, containing about four acres, was divided into fquare plats, from four to five feet wide, which were furrounded by little mounds of earth, four inches high. In thefe inclofures, previoufly filled with dry ftraw, or fugar-cane haum, were placed as many broad, fhallow, unglazed earthen pans, containing unboiled pump water, as they could hold. The air was generally very ftill, when much ice was formed; wind prevented its formation altogether. In the morning, between five and fix o'clock, at which time alone, Mr. Williams made his obfervations, a thermometer, with its bulb naked, placed on the ftraw, amidft the freezing veffels, was never found by him lower than 35°; and he has obferved ice, when a thermometer fo placed was 42°. Another thermometer, fufpended five feet and a half above the ground, was commonly 4° higher than that among the pans. It is poffible, therefore, that Mr. Williams may have feen ice, a little before fun-rife, when the temperature of the air was 46°. But granting this were the fact, it would not hence follow, that the ice was formed, while the air poffeffed that heat. For, although the air is generally held to be in all countries colder about fun-rife than at any other time, I know, from my own obfervations, that this is not always the cafe in England; and fimilar exceptions may occur in Bengal."

The formation of ice in the circumftances above fpecified is afcribed by fir R. Barker wholly, and by Mr. Williams in great meafure, to cold produced by evaporation: and this opinion has been adopted by bifhop Watfon, Thompfon, Young, Davy, and Leflie. Dr. Wells, however, is of opinion, that they have not fully confidered the fubject, alleging feveral reafons againft it. He conceives, agreeably to his fentiments refpecting the formation of dew (fee DEW), that the formation of ice in Bengal depends upon the radiation of heat to the heavens. This caufe, he fays, not only exifts, but exifts in a degree fufficient for the production of the effect which he attributes to it. To this purpofe he obferves, that according to Mr. Leflie (on Heat, p. 80.) the power of water to radiate heat exceeds, perhaps, that of all other fubftances. Ice, he adds, is chiefly formed in Bengal during the cleareft and calmeft nights; and on fuch nights the greateft cold, from radiation, is perceived on the furface of the earth. Moreover, the cold that produces this effect in Bengal appears, in its greateft degree, like cold from radiation in other fubftances, on thofe ftill and ferene nights, during which little dew is depofited by the atmofphere. He further adds, that clouds and wind prevent the formation of ice in Bengal; and that the fame ftates of the atmofphere either prevent, or confiderably diminifh, the occurrence of cold from the radiation of heat at night by bodies on the ground. From experiments, in procuring ice in the manner of Barker and Williams, Dr. Wells found reafon for inferring, that water may freeze at night, in air of a temperature higher than 32°, not only without any lofs of weight from evaporation, but with a gain of weight from an oppofite procefs: and he concludes in general, that the formation of ice in Bengal, in the circumftances defcribed by Barker and Williams, muft be attributed, in by far the greater meafure, if not altogether, to a lofs of heat, which the water fuffers by its own radiation, while fituated in fuch a manner, that it can receive little heat from other bodies, either by radiation or conduction. Our author, in the courfe of his experiments, found, that evaporation from water of 32° produces very little cold, even in the day-time: and he thinks it much more probable, that on a clear and calm night, though in a dry winter of Bengal, water at the temperature of 32° will acquire warmth from the formation of dew upon it, than that it will become cold from evaporation.

ICHNEUMON. Add—The characters are, mouth with jaws, without tongue; antennæ with more than thirty joints; abdomen in moft fpecies foot-ftalked; piercer exferted, with a cylindric-bivalve fheath. The animals of this genus depofit their eggs in the bodies of other living infects, and generally in thofe of caterpillars. Here they hatch, and the young larvæ, refembling fmall white maggots, nourifh themfelves with the juices of the unfortunate animal, and at length the young brood of ichneumon larvæ creep out by perforating the fkin in various places, and each fpinning itfelf up in a fmall oval filken cafe, changes into chryfalis, the whole number forming a group on the fhrivelled body of the caterpillar which had afforded them nourifhment, and, after a certain period, emerge in the ftate of complete ichneumons. The principal fpecies are, glomeratus, puperum, ovulorum, ramidulus, luteus. See Vespa, and Wasp.

ICHNOCARPUS, in *Botany*, Ait. Hort. Kew. v. 2. 69. See Ischnocarpus.

ICTUS Solaris, *A Stroke of the Sun*, denotes the effect of a too violent influence of the fun upon the head. It is ranked by Dr. Cullen as a variety of apoplexy, under the name of "Carus ab infolatione."

IDA. Add—The fummit of Ida is denominated Gargarus; and it affords a level furface, of no great extent, but of an oblong form, with a rudely-built wall around it, in which are fmall blocks of marble. This inclofure, it is conjectured, may have been a Greek church, or perhaps only a fheep-pen, united for the protection of the flocks in the fummer months.

IDOCRASE. See Vesuvian.

IDOLATRY, col. 5, l. 15 from the bottom, for even *r.* ever.

JEDBURGH. In 1811, the burgh and parifh contained 669 houfes, and 4454 perfons; *viz.* 1957 males, and 2497 females: 399 families being employed in agriculture, and 405 in trade and manufactures.

JEFFERSON. (See Jackson.)—Alfo, a county of the Miffiffippi, containing 4001 inhabitants, of whom 1792 were flaves in 1810.—Alfo, a townfhip of Clarke county, in the Indiana territory.

Jefferson, in Kentucky, l. 3, *r.* 11,611; l. 4, *r.* 3746; l. 7,—It contains, together with Louifville, 6111 inhabitants, the flaves in the county being 2080, and in the town 256; l. 9, *r.* 7309 inhabitants, of whom 783 are flaves; l. 14, *r.* 197; *r.* 11 towns with 17,260 inhabitants, of whom 6001 are flaves; l. 14, after Steubenville, add—Alfo, a town of Adams' county, in Ohio, having 494 inhabitants.—Alfo, a town of Fayette county, in Ohio, having 327 perfons.—Alfo, a townfhip of Madifon county, in Ohio, having 246 inhabitants.—Alfo, a townfhip of Montgomery county, in Ohio, having 1343 inhabitants.—Alfo, a townfhip of Mufkingum county, in Ohio, having 962 perfons.—Alfo, a townfhip of Prebble county, in Ohio, having 385 inhabitants.—Alfo, a townfhip of Rofs county, in Ohio, having 1456 inhabitants.—Alfo, a townfhip of Scioto county, in Ohio, with 258 perfons.—Alfo, a townfhip of Geauga county, in Ohio, containing 168 inhabitants. —Alfo, a town in Maine, in Lincoln county, having 1205 inhabitants:—l. 16—Alfo, a county of Virginia, containing 11,581 inhabitants, including 3532 flaves; l. 17, for Grafton *r.* Coos, New Hampfhire; do. *r.* 197; l. 19, after Scottville, add—Alfo, a county, containing 161 inhabitants.—Alfo, a townfhip of Greene county, in Pennfylvania, having 1124 inhabitants.—Alfo, a county of New York, containing 15,140 inhabitants.

JERICO, l. 4, *r.* 1185.

JERSEY, New, after the table, add—By the cenfus of 1810, the whole number of its inhabitants is ftated to be 245,562, and that of flaves 10,851. See each county, and United States.

JESSAMINE, l. 2, *r.* 8219 and 2466.

JET. See Mineralogy, *Addenda.*

JEWS, col. 16, l. 9 from the bottom, *r.* 110,000.

JINJAL, denotes a large mufket, fixed on a trivet, ufed in Indian forts, and fired with great precifion.

ILCHESTER, l. 4 from the bottom, *r.* 1811—83—610.

ILEUM. See Intestine.

ILFRACOMBE, l. *ult.* *r.* 434 and 1934.

ILLINOIS. Add—The Illinois territory, now one of the United States, contains two counties, *viz.* St. Clair and Randolph: the former comprehending nine townfhips, and the latter four; and the number of inhabitants in the whole territory is ftated, by the cenfus of 1810, to be 12,282 perfons, of whom 168 were flaves. See United States.

ILLORI, a town of Mingrelia, on the left bank of the Enguri, furrounded by a wall.

ILMINSTER. By the return in 1811, the parifh contained 364 houfes, and 2160 perfons; *viz.* 1022 males, and 1138 females: 121 families being employed in agriculture, and 231 in trade, manufactures, and handicraft.

ILSLEY, l. 2, and Eaft and Weft Ilfley were returned to parliament, in 1811, as containing 179 houfes, and 996 perfons.

IMIRETTA, l. 8, after W. add—between the 43d and 44th degrees of N. lat.

IMPEDIMENTS, in *Elocution.* See Larynx, and the references under that article

IMPERATA, in *Botany*, fo called after Ferrante Imperato,

perato, a Neapolitan botanift of the 16th century. See SACCHARUM, n. 15.

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INCUBATION, *dele* the account of the figures.

INDEPENDENCE, in *Geography*, a town of Suffex county, in New Jerfey, containing 1224 inhabitants.

INDIANA. After the table, add—According to the cenfus of 1810, Indiana is divided into five counties, *viz.* Dearborn, having 7310 inhabitants; Clark, with 5670; Harrifon in two divifions, having in one 2338, and in the other 1257 inhabitants; and Knox in two cantons, one having 4097, and the other 3848. See UNITED STATES.

INDIANA, in Pennfylvania. Add—Indiana contains nine townfhips, and 6214 inhabitants.—Alfo, a townfhip of Alleghany county, in Pennfylvania, containing 692 inhabitants.

INDICATOR, *Honey-guide*, in *Ornithology*, a peculiar genus formed of the CUCULUS *Indicator;* the characters of which are, beak ftrong, conic, dilated at the bafe, narrow towards the tip, the upper mandible bent and carinated, the lower one recurved at the tip; noftrils flightly covered with feathers, feet fimple, with two toes before and two behind. The external hinder toe longeft, armed with a ftout claw. See CUCULUS, and for Dr. Sparrman's account of it, Phil. Tranf. vol. lxvii. p. 38.

INDIGO, *Chemical Properties of.* The indigo of commerce is exceedingly impure, and feldom contains more than half its weight of real indigo. Thus, Bergmann could only obtain 47 *per cent.* of real indigo from the pureft fpecimen he could procure; and more lately Chevreul from the beft guatimala could only obtain 45 *per cent.* The following analyfis of Chevreul will give fome idea of the fubftances with which the indigo of commerce is adulterated.

Subftances feparated by water	Ammonia Difoxygenifed indigo Green matter Bitter matter	12
——— alcohol	Green matter Red matter Indigo	30
——— muriatic acid	Red matter Carbonate of lime	6 2
	Oxyd of iron and alumina	2
	Silica	3
	Pure indigo	45
		100

The principal properties of indigo have been already detailed. The effects of nitric acid upon indigo, however, as afcertained by Mr. Hatchett, have been omitted, and are fo interefting that they deferve to be mentioned.

Nitric acid acts on indigo with great violence, fo as even to fet fire to it when concentrated, as was long ago obferved by Woulfe. When the acid is dilute, the action is lefs violent. Mr. Hatchett, however, found, that when diluted with an equal quantity of water, the action of the acid was ftill fo violent as to require further dilution. When the effervefcence had nearly fubfided, the liquid was placed on a fand-bath for fome days, and evaporated to drynefs. Water poured upon this refiduum diffolved a confiderable portion of it, and formed a beautiful deep yellow folution of an intenfe bitter tafte. This folution contains only a very fmall portion of oxalic acid; but with a folution of ifinglafs it forms a copious yellow infoluble precipitate, and hence contains a portion of artificial tannin; with ammonia, cryftals precipitate, confifting of *bitter principle* combined with ammonia.

When four parts of nitric acid are poured upon one part of indigo, the pigment foon lofes its colour, and is diffolved. The folution becomes yellow, and a thin layer of a refinous-like fubftance appears on the furface. This fubftance becomes folid on cooling if the procefs be now ftopped. If it be removed, and the folution be evaporated to the confiftence of honey, rediffolved in hot water and filtered, potafh throws down yellow fpicular cryftals, confifting of *bitter principle* combined with potafh. Thefe cryftals have the property of detonating with a purple light when wrapped up in a paper, and ftruck with a hammer; the refin by treating it with nitric acid may be converted into the fame bitter principle. If the procefs be ftopped fooner than the point above-mentioned yellow cryftals are obtained, which on fublimation become white, and appear to poffefs the properties of benzoic acid. Thus it appears, that by treating indigo with nitric acid, it is converted into tannin, oxalic acid, benzoic acid, and *bitter principles.*

INDRA, col. 2, l. 32 and 33, read thus, without a break, and omitting INDRA *Malwa*,—Malwa, the hereditary poffeffion, &c.

INDUSTRY, in *Geography*, a townfhip of America, in Maine, county of Somerfet, having 562 inhabitants.

INFLAMMATION *of the Breaft.* See BREAST, *Inflammation of*, in the *Addenda.*

INGA, in *Botany*, an American name, recorded by Marcgraave, and adopted by Plumier. It was funk in *Mimofa* by Linnæus; but Humboldt and Bonpland having feparated from thence the original genus of Plumier, have retained the appellation he had chofen, and they are followed by Willdenow, as well as by Brown and Aiton in *Hort. Kew.* If any barbarous name be tolerated, and they can hardly be all expunged, the prefent is unexceptionable. —Plum. Gen. 13. t. 19. Willd. Sp. Pl. v. 4. 1004. Ait. Hort. Kew. v. 5. 451.—Clafs and order, *Polygamia Monoecia;* rather *Monadelphia Polyandria.* Nat. Ord. *Lomentaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Calyx five-toothed. Corolla tubular, five-toothed. Stamens united into a cylindrical tube. Legume of one cell. Seeds imbedded in pulpy tunics. Some flowers without a piftil.

Obf. If *Mimofa* be divided at all, the prefent numerous genus may commodioufly be feparated from it, though the *inflorefcence*, and ftructure of the *flowers*, come, in many inftances, very clofe to ACACIA; fee that article, as well as MIMOSA and DESMANTHUS. From the laft, *Inga* is truly diftinct, in having monadelphous indefinitely numerous *ftamens*, no neuter, though many male, *flowers*, and in every inftance a very different *fruit.* The greater fize of the *leaflets* is characteriftic of *Inga*, and they are, for the moft part, differently compounded from thofe of the other genera. Willdenow enumerates fifty-eight fpecies, fome of them truly fuperb in their *flowers.* We fhall give examples of this writer's fix fections. The *leaves* of this whole genus are compound; none of them fenfitive.

Sect. 1. *Leaves twice yoked.* Eleven fpecies.

I. *dulcis.* Sweet Inga, or Sappan Fruit. Willd. n. 3. Ait. n. 1. (Mimofa dulcis; Roxb. Corom. v. 1. 67. t. 99.) —Thorns ftipulary, ftraight. Leaflets elliptic-oblong, fomewhat pointed. Footftalks with three glands. Clufter compound, terminal. Flowers capitate. Legume twifted. —Native of the Philippine iflands. Cultivated on the coaft of of Coromandel, for the ſake of its ſweet pulpy red *fruit*, which is ſix inches long, wholeſome, though rather inſipid. *Flowers* ſmall, white.

Sect. 2. *Leaves thrice yoked.* Five ſpecies.

I. *tergemina.* Martinico Inga. Willd. n. 12. (Mimoſa tergemina; Linn. Sp. Pl. 1499. Jacq. Amer. 265. t. 177. f. 81. Acacia fruteſcens, &c.; Plum. Ic. 5. t. 10. f. 1, the Linnæan characters tranſpoſed in the plate.)—Thorns none. Leaflets obovate, obtuſe; glaucous beneath. Tufts of flowers on ſolitary axillary ſtalks. Legume ſtraight.—Native of Martinico. *Leaflets* an inch long, oblique. *Flowers* purpliſh.

Sect. 3. *Leaves pinnate; common ſtalk winged. Thorns none.* Twelve ſpecies.

I. *vera.* Common Inga. Willd. n. 17. Ait. n. 3. (Mimoſa Inga; Linn. Sp. Pl. 1498. Inga flore albo fimbriato, fructu dulci; Plum. Ic. 14. t. 25. Arbor; Merian. Surin. t. 51.)—Leaflets about five pair, ovate-oblong, pointed, ſmooth, with a gland between each pair. Corolla hairy. Legume furrowed, downy.—Native of South America and the Weſt Indies, where the *legumes* are eſteemed for their agreeable ſweetneſs.

I. *faſtuoſa.* Stately Inga. Willd. n. 25. (Mimoſa faſtuoſa; Jacq. Fragm. 15. t. 10.)—Leaflets about four pair, ovate, pointed; hairy beneath; with a ſtalked gland between each pair. Corolla hairy. Legume hairy, compreſſed, twiſted.—Native of the Caraccas. We have from Dr. Mærter a fine dried ſpecimen, ſuch as that from which Jacquin's plate is taken. This is a truly magnificent plant, whoſe copious large tawny *flowers*, with long crimſon *ſtamens*, make a ſplendid appearance. The *leaflets* are from two to five inches long. *Legume* broad, flat, but containing a ſweet pulp, with large oval *ſeeds*.

Sect. 4. *Leaves pinnate; common ſtalk ſimple. Thorns none.* Ten ſpecies.

I. *nodoſa.* Knobbed Inga. Willd. n. 29. Ait. n. 6. (Mimoſa nodoſa; Linn. Sp. Pl. 1498. Phaſeolus arboreus, &c.; Pluk. Phyt. t. 211. f. 5.)—Leaflets two pair, ovate-oblong, ſmooth, unequally divided by the rib; the lower ones ſmalleſt, with a gland between.—Found in Ceylon and Cochinchina. It appears to have been raiſed in the Engliſh and Dutch ſtoves, but not preſerved. The *leaflets* are from one to two inches long, their two ſides very unequal.

Sect. 5. *Leaves conjugate, pinnate.* Nine ſpecies.

I. *purpurea.* Purple Inga, or Soldier-buſh. Willd. n. 42. Ait. n. 8. (Mimoſa purpurea; Linn. Sp. Pl. 1500. Andr. Repoſ. t. 372. Acacia fruteſcens, &c.; Plum. Ic. 6. t. 10. f. 2, the Linnæan character miſapplied.)—Leaflets four pair, obovate, obtuſe; unequal at the baſe. Footſtalks without glands. Heads of flowers ſtalked.—Native of the Weſt Indies. The *leaflets* are half an inch long, ſmooth. *Flowers* copious, very conſpicuous for their long taſſels of crimſon ſtamens.

Sect. 6. *Leaves doubly pinnate.* Eleven ſpecies; ſome thorny.

I. *Saman.* Great Downy-leaved Inga. Willd. n. 49. (Mimoſa Saman; Jacq. Fragm. 15. t. 9.)—Thorns none. Leaves with ſix pair of primary diviſions; leaflets five or ſix pair, elliptic-obovate, obtuſe; terminal ones unequal-ſided; all downy beneath as well as their ſtalks.—Native of the Caraccas. One of the largeſt and ſtouteſt trees of the *Mimoſa* tribe. *Leaves* two feet, or more, in extent, with a depreſſed gland at every ſubdiviſion. *Legume* flat, ſeven or eight inches long.

INGATESTONE, l. 5, *r.* 98 and 640.

INSTITUTE, National, &c. col. 2, after line 6, add—By a royal edict, paſſed the 26th of March, 1816, the firſt claſs reſumes the name of the Royal Academy of Sciences, preſerving the organization and diſtribution in ſections.

INVERARY, col. 2, l. 8 and 7 from bottom, *r.* 103 and 1113.

INVERKEITHING. Add—The burgh and pariſh of Inverkeithing, by the laſt returns in 1811, contained 581 houſes, and 2400 perſons.

INVERNESS, col. 2, l. 7, 8, 9, *r.* The burgh and pariſh was returned, under the act of 1811, as containing 1672 houſes, and 10,757 inhabitants.

INVERNESS-SHIRE, l. 10 and 11, *r.* comprehended, in the year 1811, 78,336 perſons, occupying 14,646 houſes; 35,722 being males, and 42,614 females.

INVERURY. In 1811, the burgh and pariſh contained 205 houſes, and 907 perſons; 453 being males, and 454 females.

INULIN, in *Chemiſtry*, a name given by Dr. Thomſon to a ſubſtance extracted by Roſe, from the *Inula helenium*, or Elecampane. This ſubſtance is extracted by boiling the roots in water, and putting by the decoction to cool, when the inulin is depoſited in the form of a white powder. Inulin reſembles ſtarch in its appearance, and ſome of its properties. It is principally diſtinguiſhed from ſtarch by ſeparating from water after boiling in the form of a white powder. Inulin has been found by Dr. John in the roots of ſeveral other plants.

IOANNA. Add—In 1809, this iſland was viſited by the ſavages of Madagaſcar, called Malagaſcars, who laid ſiege to the principal town, and deſtroyed the crops, and thus reduced the inhabitants to the moſt deplorable ſtate, ſo that nearly 200 women and children periſhed of hunger, and numbers of the latter were actually eaten by their parents, ſo that theſe ſavages have nearly deſolated the Comora iſlands. The once happy and flouriſhing iſland of Ioanna, with its 370 towns and villages, ſo enchantingly deſcribed by ſir William Jones, is now reduced to two walled towns, and a population of 5000 ſouls.

IOANNINA, a city of Albania, the capital of Ali's dominions, ſituated on the weſtern banks of a lake of the ſame name, at about two miles from its eaſtern extremity. In its utmoſt length, it may be, perhaps, about two and a half miles, and in breadth nearly a mile. Near the lake it ſtands on a flat, but the northern and weſtern parts are built on ſlopes of riſing and uneven ground. A triangular peninſula juts into the lake, and contains the reſidence of the pacha, being defended by a fortification at each angle. The entrance into theſe forts is over a draw-bridge. There is one ſtreet which runs nearly the whole length of the town, and another that interſects it at right angles, extending to the fortreſs; theſe are the principal ſtreets. Many of the houſes are large and well built, containing a court-yard, and having warehouſes or ſtables on the ground, and the apartments of the family above. A flight of wooden ſteps and a gallery connect the under and upper parts of the houſes. Although gloomy in appearance, with ſmall windows latticed with croſs bars of wood, the yard is furniſhed with orange and lemon trees; and the beſt houſes communicate with a garden, and the galleries are ſufficiently ſpacious to allow ſcope for walking in rainy weather. The bazaar, or principal ſtreet, inhabited by tradeſmen, has a ſhowy appearance; the bizeſteen, or covered bazaar, is of conſiderable uſe, and would put one in mind of Exeter Change in London. Beſide the palace of the pacha, and two houſes allotted to the ſons of Ali, there is another ſummer reſidence of the vizier's in the ſuburbs, at the N.W. end of the town. Beyond the pavilion,

pavilion, there are gardens belonging to the principal inhabitants of Ioannina, most of whom have summer-houses. The population is variously stated: some compute the number of houses at 8000, and others estimate the number of inhabitants at no more than 35,000. From the commercial transactions of this city, the vizier draws a revenue of 250,000 piastres. Hobhouse's Journey through Albania, &c.

IODATES, Iodic *Acid*, Iodide, in *Chemistry*. See Simple *Bodies*.

IODINE. This newly discovered elementary substance has been correctly described under Simple *Bodies*, to which, therefore, we refer our readers.

JOHN *of Gaunt*, l. 2, for third *r.* fourth.

JOHN BAPTISTE, in *Geography*, a parish of German Coast county, in the territory of Orleans, containing 2990 inhabitants.

JOHNSBURY, St., l. 3, *r.* 1330.

JOHNSON, l. 2, *r.* 4867; l. 3, *r.* 2330. Add—Also, a town of Franklin county, in Vermont, having 494 inhabitants.

JOHNSTON, l. 3, *r.* 1516. *Dele* the last paragraph, and insert—See Johnson.

IOLITE. See Mineralogy, *Addenda*.

JONES, l. 3, *r.* 4968 inhabitants, of whom 2375 were slaves in 1810.—Also, a county of Georgia, which, with its town Clinton, contains 8597 inhabitants; the number of slaves belonging to the county being 2574, and to the town 63, in 1810.

JONESBOROUGH. Add—a township of Washington county, in Maine, having 553 inhabitants.

JOSEF, St., l. 16, *r.* Tucuman.

IPECACUANHA, l. 33, add—The plant is now known to be the Callicocca.

Ipecacuanha, *Chemical Properties of*. See Emetin.

IPSWICH, l. 6.—In the year 1811, by the parliamentary returns, it contained 2732 houses, and 13,670 persons.

IRA, a town of Rutland county, in Vermont, having 519 inhabitants.

IRAC, l. 17, after wine, add—This province is divided into five great districts, and each of these into hallooks, or lesser districts. The five districts are, Ispahan, Tehraun, Naen, Mullagar, and Kermanshaw. See each. At the close, add—See Yezd, Kom, Tehraun, &c.

IRAVAT, l. 15, for *thunder, bearer* r. *thunder-bearer*.

IREBY. In 1811, the parish, comprehending High and Low Ireby, contained in the former township 26 houses, and 130 persons, *viz.* 62 males, and 68 females; and in the latter, 41 houses, and 269 persons, *viz.* 137 males, and 132 females.

IRIDIUM. See Mineralogy, *Addenda*.

IRITIS, or *Inflammation of the Iris*. Professor Schmidt, of Vienna, first accurately discriminated this disease from other kinds of ophthalmia, and applied to it the foregoing name. The iris often becomes inflamed in consequence of artificial or accidental wounds of the eye-ball. Constitutional syphilis frequently affects the eye, producing a peculiar and characteristic iritis. The iris is the texture, which is the seat of inflammation in the distinct kind of ophthalmia so frequently met with in gouty constitutions. In the rheumatic ophthalmia, the inflammation, though never originating in the iris, frequently extends to it. And, lastly, an inflammation of this membrane sometimes accompanies cutaneous eruptions; particularly those which, though not syphilitic, have succeeded sores of the genitals, and are generally supposed to be connected with the abuse of mercury.

1. In common inflammation of the iris, or *idiopathic iritis*, besides the common symptoms of ophthalmia, there are changes which occur at the very commencement that indicate the seat of the inflammation. The pupil is contracted, the motions of the iris are less free, and the pupillary opening loses the bright black colour which it naturally possesses. The colour of the iris is next observed to alter; this happens first in the lesser circle, which gets of a darker hue; and afterwards in the greater, which grows green if it has been greyish or blue, and reddish if it has been brown or black. The iris afterwards swells and projects towards the cornea; and the margin of the pupil loses its sharply defined edge, and is turned back towards the posterior chamber. The redness accompanying these changes is by no means considerable, and is at first confined to the sclerotic coat, in which a number of very minute rose-coloured vessels are seen running in straight lines towards the cornea. The pupil, at the same time, loses its circular form, becomes somewhat irregular, and presents a greyish appearance. Examined with a magnifying glass, this appearance is seen to be produced by a substance very like a cobweb, occupying the pupil, and which is soon afterwards distinguished to consist of a delicate flake of coagulable lymph. Into this, the processes or dentations of the margin of the pupil seem to shoot, and it is afterwards found, that at these points adhesions are apt to be established, in consequence of which vision is rendered more indistinct, and only one side or parts of objects can be discerned.

The effusion of lymph into the pupil continues to increase; it is likewise poured into the posterior chamber, and adhesions between the iris and capsule of the lens are formed. The quantity of lymph effused is sometimes so great, as to fall in a curdled form from the pupil to the lower part of the anterior chamber. The pupil, the size of which is considerably diminished, now derives a greyish-white colour from that of the lymph by which it is filled; the morbid sensibility to light, which prevailed at the commencement of the inflammation, is diminished; the powers of vision become gradually more and more limited; and, at length, merely the perception of light remains.

By this time, the redness of the eye has increased, and partly arises from vessels which are now developed in the conjunctiva. The redness is deepest all around the cornea; towards the periphery of the eye-ball it fades. The cornea loses somewhat of its peculiar brilliancy; and lymph now appears to be effused into the substance of the iris; for, while it projects more and more towards the cornea, its fibres are collected into bundles, and its surface exhibits a puckered or plaited appearance. A yellowish-red tubercle then forms on some part of its surface; it is at first small, but enlarges and projects forwards, and, according to Schmidt, is distinctly seen to be an abscess, which finally bursts, and discharges its contents into the anterior chamber. At this period of the disease, a small quantity of blood is sometimes extravasated into the anterior chamber. The inflammatory symptoms now abate, and, as the disease subsides, both the pus and blood in the anterior chamber are absorbed. The shreds of the cyst of the abscess, which were floating in the aqueous humour, in a few days disappear. The anterior chamber regains its transparency; the iris remains permanently expanded; its puckered appearance continues, the pupil is closed, and the power of vision is entirely lost. When the termination is somewhat more favourable, the pupil is not entirely closed, and the iris retains some degree of motion. The piece of coagulable lymph which occupies the pupil is reduced to the state of a thin membrane, which is opaque towards its centre, but somewhat transparent at the edges; the margin of the iris is only adherent at at fome points to this membrane ; and vifion is impaired, but not deftroyed.

Sometimes the inflammation of the iris extends to other textures of the eye. When the cornea is attacked, it becomes cloudy and thickened ; and the iris projecting, the two inflamed textures come into contact, and adhere before any vifible effufion of lymph takes place. Should the inflammation fpread more deeply, and attack the membranes of the lens, and of the vitreous humour, the choroid coat, &c. then the violent fymptoms of deep-feated inflammation of the eye take place. Even if the form of the organ is preferved, vifion is totally deftroyed ; but often the eye fuppurates, burfts, and almoft entirely difappears.

In the *Syphilitic Iritis*, a pale rednefs all round the cornea is the firft fymptom which is perceived. It is at firft feated in the fclerotic coat alone ; but the conjunctiva very foon fhares in it, and afterwards becomes even redder than the preceding membrane. However few the veffels may be elfewhere, there is always a broad zone of them all round the cornea, a zone formed at this place, not only by the vafcular net-work in the conjunctiva, but by the ciliary veffels on the external furface of the fclerotica. The rednefs has a peculiar tint ; for inftead of being bright red, it is brownifh, fomething like the colour of cinnamon. The whole cornea becomes uniformly hazy. The pupil alfo becomes contracted, and the iris limited in its motions, as in common iritis ; but the pupil does not preferve its natural fituation. It is removed in a direction upwards and inwards towards the root of the nofe, and is irregular. At the fame time, the iris lofes its natural colour, and projects forwards.

Towards evening, there is always an aggravation of the fymptoms ; the intolerance of light and painful fenfibility of the whole eye increafing, and a gufh of tears following every change of light and temperature. At length, a regular nightly pain fets in, of an extremely fevere kind, but ftrictly limited to that part of the cranium which is immediately above the eye-brow. It ufually begins between fix and feven in the evening, gradually increafes, reaches its utmoft height about midnight, and then diminifhes till about four or five in the morning, when it ceafes. After every fuch attack of pain, the pupil is found more contracted, drawn farther upwards and inwards, the iris more altered both in colour and form, the quantity of lymph increafed, and confequently vifion more impeded.

Peculiar appearances then take place in the iris ; for, either on its pupillary or ciliary margin, or on both, one or more reddifh-brown tubercles arife, which have a fpongy look. Their growth is pretty rapid. Lardy-looking ulcers fometimes appear on the cornea and white of the eye, or on the eye-lids. Even when fyphilitic iritis terminates in the moft favourable manner, the eye for a long time afterwards is peculiarly fenfible to the influence of cold and moifture. On every expofure to thefe, the organ becomes morbidly fenfible to light, of a reddifh colour, and difcharges tears. Indeed, frequently for more than a year afterwards, on every fudden change of temperature, a pale violet-coloured zone appears around the cornea, but goes off when the eye has remained for fome time expofed to an equal temperature.

In the iritis which appears in conjunction with the eruptions fuppofed to be connected with the abufe of mercury, the inflammation feems lefs active than in the other kinds. The pupil is not much contracted, and lymph is lefs apt to be effufed. A veficle full of yellow matter fometimes rifes on the iris, without any other alteration on this membrane than that of colour, the pupil remaining almoft unchanged. By the ufe of proper remedies, this veficle, even when it feems quite ready to burft, can generally be made to difappear in a few days, without any rupture taking place. The blood-veffels of the conjunctiva are large and diftended, without being varicofe ; they have a more livid colour than in the iritis of arthritic perfons, and run quite to the edge of the cornea.

The treatment of iritis is conducted on the fame principles as that of inflammation in general, with one difference, which is deduced from the important fact fo well explained by Dr. Farre and Mr. Travers, *viz.* that in iritis, the free exhibition of mercury is the moft effectual means of preventing the effufion of coagulating lymph, and promoting its abforption after it has taken place, from which effufion the thickening and adhefions of the iris, the formation of opacities in the pupil, and other mifchievous and deftructive effects upon vifion, are principally derived. According to Mr. Travers, indeed, whatever may be the caufe of iritis, mercury is the grand remedy for refifting the progrefs and confequences of the effufion of lymph in the eye. According to profeffor Schmidt, of Vienna, general bleeding is neceffary only where there is a great degree of fymptomatic inflammatory fever. Hence, it is principally in the idiopathic iritis that large bleedings from the arm are requifite. In the fyphilitic fpecies, he fays, it is never neceffary to open a vein. In the arthritic, it is fometimes attended with benefit ; but in patients of this defcription, a fmall bleeding, repeated next day if neceffary, is found to anfwer much better than a large bleeding at once, even though the conftitutional difturbance be confiderable. In the *rheumatic iritis*, it is alfo fometimes highly beneficial to bleed from the arm. Local bleeding, by means of leeches to the forehead, produces the moft decided benefit in all the varieties of iritis.

Purgatives, given fo as to act copioufly, profeffor Schmidt defcribes as being ufeful only in the idiopathic iritis ; and as for cold local application, he tells us that they are in all cafes quite ufelefs.

In the idiopathic iritis, he recommends us to take fixteen or twenty ounces of blood from the arm ; and to repeat the bleeding if circumftances fhould require it. Six or eight leeches are to be applied to the eye-brow or temple. A fmart purgative fhould then be given. The application of leeches, but in fmaller number, fhould be continued every day, or every other day, until an abatement of the inflammation has evidently taken place. In the firft ftage of the procefs, blifters to the temple, or behind the ears, have little or no effect ; though fometimes a large one on the nape of the neck feems to be of fervice. According to Schmidt, the only topical treatment which is admiffible is the fomentation of the eye with water made as hot as the patient can bear it, which fometimes procures a mitigation of the violence of the pain. Care, however, muft be taken to dry the eye-lids and circumference of the orbit well after ufing this application.

When the difeafe paffes into its fecond ftage, or that in which the effufion of coagulating lymph commences, mercury is to be given with the views already mentioned. Two grains of the fubmuriate of mercury, and half a grain of opium, made into a pill, are to be given every evening and morning ; or common mercurial frictions may be employed. Externally, profeffor Beer applies a folution of the oxymuriate of mercury in water, to which mucilage and a confiderable quantity of the vinum opii have been added. When this collyrium lofes its effect, or the eye cannot bear any fluid application, which is fometimes the cafe, then he inferts daily between the eye-lids a fmall quantity of a falve compofed of two drachms of frefh butter, fix grains of red precipitate, and eight grains of extract of opium. According

to

to the same eminent oculist, frictions once a day over the eye-brow with mercurial ointment, opium being added to it, very much contribute to the absorption of the lymph effused in the posterior chamber.

It is seldom necessary to continue many days the exhibition of mercury; for such is the efficacy of this mineral in producing a removal of the lymph, and clearing away all opacities about the pupil, that in less than eight or ten days these objects are generally effected, and the medicine then may be omitted.

The form of iritis, usually named *syphilitic*, is unquestionably one of those diseases which does not require more mercury for its cure than the common idiopathic iritis; and although it was supposed by professor Schmidt that it could not be radically cured without removing the constitutional disease, modern experience fully proves, that it may often be entirely and permanently relieved by freely exhibiting mercury for only a few days. This is another fact tending to confirm the opinions which have recently been examined and promulgated with so much ability by several of our army surgeons, in relation to the curability of all the forms of syphilis without mercury. For, even in the syphilitic iritis, we are not to imagine that the complaint is stopped and cured by a few grains of calomel, on the principle of eradicating a specific disease: the thing is more rationally explained by the peculiar efficacy of the medicine in producing an absorption of the lymph, which thickens the iris, obstructs the pupil, and even serves for the formation of preternatural adhesions, and new opaque membranes destructive of vision. Besides the use of mercury, however, other means are advisable. When there is severe pain in the eye with violent head-ache, three or four leeches should be applied on the eye-brow, and a mild purgative administered. The nightly attacks of pain, which are so invariably followed by an aggravation of all the symptoms, are most effectually prevented by rubbing into the part just over the eye-brow a small quantity of mercurial ointment with opium, a short time before the pain is expected to begin, and then covering the eye with a folded piece of warm linen. Generally speaking, calomel given in small doses two or three times a day, is the best preparation of mercury for internal exhibition.

The *iritis* which accompanies cutaneous eruptions was thought by Schmidt to be the most easy of cure; local bleedings are said to be in this case strikingly beneficial. According to some writers, when the eruptions have arisen from the previous abuse of mercury, calomel has not the least effect on the accompanying iritis. But at the London Infirmary for diseases of the eye, this form of the disease, though originally it may have been caused by the effects of a mercurial course, is said to be benefited as much as the other varieties of iritis by the exhibition of mercury; a circumstance which no mode of reasoning would ever have led us to anticipate. If, however, it be an unequivocal fact, the voice of experience must direct us in practice, and we must be silent on things which we cannot explain.

The best account of iritis is contained in professor Schmidt's valuable work, entitled "Ueber Nachstaar und Iritis nach Staar-Operationen," 4to. Wien. 1801. Additional information is also published in Beer's "Lehre von den Augenkrankheiten," b. i. p. 450. Wien. 1813. Saunders on Diseases of the Eye, edit. 3. by Dr. Farre; B. Travers, in "Surgical Essays," part i. Carmichael in "Observations on the Symptoms and Specific Distinctions of Venereal Diseases," 8vo. 1818. The Quarterly Journal of Foreign Medicine, N° 1. contains a well-written analysis of professor Schmidt's work on Iritis; and at the same time that we acknowledge our obligations to that periodical publication for every thing which is valuable in this article, we cannot refrain from expressing our best wishes for the success of a journal, the principal object of which is to make us acquainted with the contents of all the best modern books which appear on the subject of medical science in different parts of the continent.

IRON, in *Chemistry*. According to the recent determination of Dr. Thomson, the black or protoxyd of iron is a compound of

Iron - - -	100.
Oxygen - -	28.5

Hence the weight of the atom of iron will be 35. The red or peroxyd of iron, according to the same chemist, is a compound of

Iron - - -	100.
Oxygen - -	42.955

Or it is composed of 1 atom iron + $1\frac{1}{2}$ atoms oxygen, or, to get rid of fractions, of 2 atoms iron + 3 atoms oxygen, on which latter supposition the weight of an atom of peroxyd will be 100.

Iron-Clay. See Mineralogy, *Addenda*.

Iron-Flint. See Mineralogy, *Addenda*.

Iron, *Meteoric*. See Mineralogy, *Addenda*.

Iron-Sand. See Mineralogy, *Addenda*.

Iron-Stone, *Iron-Ore*. See Iron-Stone, and Mineralogy, *Addenda*.

Iron-Stone, *Magnetic*. See Mineralogy, *Addenda*.

IRVINE, col. 2, l. 12, *r.* In 1811, the burgh and parish contained 694 houses, and 5750 inhabitants.

IRWIN, a township of Venango county, in Pennsylvania, having 357 inhabitants.

ISAURIA, l. 1, for town *r.* country.

ISCHNOCARPUS, in *Botany*, from ἰσχνός, *slender*, and καρπος, *fruit*.—Brown Tr. of Wern. Soc. v. 1. 61. Ait. Hort. Kew. v. 2. 69.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juss. Br.

Eff. Ch. Follicles two, thread-shaped, divaricated. Seeds hairy at the top. Corolla salver-shaped; throat naked. Anthers not attached to the stigma.

1. I. *frutescens*. Ait. n. 1. (Apocynum *frutescens*, see that article, n. 7. Burm. Zeyl. t. 12. f. 1.)—The only species.

ISLE of Wight. At the end, add—By the parliamentary returns in 1811, the Isle of Wight contained 4323 houses, and 24,120 persons; 11,955 being males, and 12,165 females.

Isle *of Wight*, in America, l. 3, *r.* containing 9186 inhabitants, of whom 4041 were slaves in 1810.

ISLEBOROUGH, l. 5, *r.* 583.

ISLEWORTH, l. 20, add—By the parliamentary returns in 1811, the parish contained 775 houses, and 4661 persons.

ISLINGTON, col. 2, l. 15, *r.* 1811—15,065—2399.

ISOCHILUS, in *Botany*, ἴσος, *equal*, and χεῖλος, *a lip*, from the proportion of that part to the calyx and petals.—Brown in Ait. Hort. Kew. v. 5. 209.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Lip nearly similar to the converging petals and calyx. Anther a moveable deciduous lid. Masses of pollen four, parallel.

1. I. *linearis*. Ait. n. 1. (Epidendrum lineare; Jacq. Amer. 221. t. 131. f. 1.)—Spike terminal. Leaves linear, emarginate. Stem simple.

2. I. *prolifer.* Ait. n. 2. (Cymbidium proliferum; Willd. Sp. Pl. v. 4. 95.)—Flowers axillary. Leaves lanceolate-oblong. Stem proliferous, with axillary two-leaved bulbs.—Both species grow in the West Indies.

ISRAEL, in *Geography*, a township of Prebble county, in Ohio, having 394 inhabitants.

JUBILEE, l. 13, for thirty-five *r.* thirty-three.

IVES, St. l. *penult. r.* 1811—712—3281 persons, in the borough and parish.

IVES, *St.* l. 4 from the end, *r.* 1811—2426—474.

JULFA. See ZULPHA.

JULIEN, St. l. 3, *r.* Saulnlic.

JUNGLE, denotes, particularly in India, a wood or thicket, in a country overrun with shrubs or long grass.

JUNIATA, in *Geography*, a township of Cumberland county, in Pennsylvania, having 1233 inhabitants.

IXODIA, in *Botany*, from ἰξώδης, *viscid.*—Brown in Ait. Hort. Kew. v. 4. 517.—Class and order, *Syngenesia Polyg.-æqualis*. Nat. Ord. *Compositæ*.

Eff. Ch. Recept. chaffy. Seed-down none. Calyx imbricated; inner scales radiating, coloured.

1. I. *achillæoides.* Ait. n. 1.—Native of the south coast of New Holland. A green-house shrub, flowering most part of the year.

K.

KAMA, col. 2, l. 3 from bottom, for *magry* r. *mogry.*

KAMAL, *dele* l. 2, 3, and 4 from the bottom.

KAMAWKA, in *Geography*, a county of Virginia, containing 3366 persons, of whom 352 were slaves in 1810.

KARLY, col. 2, l. 8, for ball *r.* base; l. 15 from bottom, for as *r.* or.

KARPOOT, a large and ancient town in the pachalic of Diarbekr, built on the summit of a hill, at the western extremity of a fertile valley, about three or four miles broad, and from twenty to twenty-five miles long.

KASAWAGO, a township of Crawford county, in Pennsylvania, having 384 inhabitants.

KASHEKA, for *Visnavitra* r. *Viswamitra.*

KASI, l. 4, for nari *r.* nasi.

KASKASKIAS, l. 5, *r.* 622, and 48.

KASYAPA, l. 7, for all *r.* use.

KAYKIYA, l. 4, for Lucins, his half brother *r.* twins, his half brothers.

KAZAMEEN, a town of Persia, in the pachalic of Bagdad, three miles north of Bagdad, and on the western bank of the Tigris, inhabited by about 8000 Persians, who reside here because this town is the burying-place of Imam Mousa Cassim, and Imam Mahomet Tonky, holy men for whom they had great respect, and to whose memory a noble mosque is erected. About nine miles north-west of Kazameen, and at some distance from the river, a pyramidical structure is erected, called by Europeans the Tower of Babel, Nimrood by the natives of Bagdad, and Agerkaf by the Arabians, and supposed by some to be coeval with the remains of ancient Babylon. It is 190 feet high, and 100 in diameter.

KAZARON, or KAZEROON, *r.* nearly seventy miles W.S.W. of Schiras, E. long. 51° 43′. This town is situated in a valley about thirty miles long, and seven or eight broad, bounded on the N. by a salt lake, and fertilized by many streams of excellent water. From the depopulation it has suffered, its present inhabitants do not exceed 3000 or 4000.

KEARSARGE GORE, a township of Hillsborough county, in New Hampshire, having 125 inhabitants.

KEENE, l. 3, 1810; l. 4, *r.* 1646.

KEITH. In 1811 the parish contained 755 houses, and 3352 persons; 1391 being males, and 1961 females: 173 families employed in agriculture, and 295 in trade, manufactures, and handicraft.

KELAT, the capital of Balouchistan, &c.; add—It is immediately encompassed by a low mud wall, and contains 4000 houses: the inhabitants are estimated at 7000, of whom 500 at least are Hindoos. The palace of the Khan is seated on a very high hill, and commands a view of the whole place and neighbouring country. The bazaar is well supplied, and the town has the appearance of opulence, being frequented by merchants, and enjoying a considerable trade. N. lat. 29° 6′. E. long. 67° 57′.

KELLY VALE, a township of Orleans county, in Vermont, having 40 inhabitants.

KELSO. In 1811 the parish of Kelso contained 529 houses, and 4408 persons; 1979 being males, and 2429 females: and the district of Kelso, comprehending twelve parishes, contained 2173 houses, and 12,378 persons; 5592 being males, and 6786 females: 1268 families employed in agriculture, and 797 in trade, manufactures, and handicraft.

KENDAL, l. *ult.* In the year 1811, Kendal ward contained 2719 houses, and 13,674 persons; and the town of Kirkby Kendal contained 1496 houses, and 7508 persons.

KENERA, l. 9, for there *r.* these.

KENFIG. In 1811, the parish contained 55 houses, and 242 persons; 119 being males, and 123 females: and Higher Kenfig, which is a hamlet in Mengan parish, contained 24 houses, and 129 persons; 69 being males, and 60 females.

KENILWORTH. In 1811 the parish contained 463 houses, and 2279 persons; 1145 being males, and 1134 females: 155 families employed in agriculture, and 264 in trade, manufactures, and handicraft.

KENNEBECK, l. *ult.* It contained, in 1810, 32,564 inhabitants.

KENNEDIA, in *Botany*, fo named in honour of Mr. Kennedy, the well-known cultivator at Hammerfmith, whofe fkill and experience have fo much enriched the works of his fon-in-law, Mr. Andrews.—Venten. Malmaif. 104. Brown in Ait. Hort. Kew. v. 4. 299.—Clafs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Standard recurved, diftant from the keel and wings. Legume of many fingle-feeded cells. Seeds crefted.

1. K. *rubicunda.* Dingy Kennedia. Vent. t. 104. (Glycine rubicunda; Curt. Mag. t. 268. Willd. Sp. Pl. v. 3. 1065. Schneev. Ic. t. 28.)—Leaves ternate, ovate. Stalks moftly three-flowered. Legume very hairy.—Found by fir J. Banks, in New South Wales. An elegant greenhoufe *fhrub*, with downy twining *ftems*, and large *flowers*, party-coloured with red and purple.

2. K. *coccinea.* Tufted Scarlet Kennedia. Vent. t. 105, but not of Curtis.—Leaves ternate, obovate. Flowers capitate. Legume nearly fmooth.—Gathered by Mr. Brown on the fouth-weft coaft of New Holland.

3. K. *proftrata.* Few-flowered Scarlet Kennedia. Br. in Ait. n. 3. (Glycine coccinea; Curt. Mag. t. 270. Willd. Sp. Pl. v. 3. 1065.)—Leaves ternate, obovate, hairy. Stalks one or two flowered. Stem proftrate.—Native of New South Wales, from whence its feeds were brought about 1790.

4. K. *monophylla.* Simple-leaved Kennedia. Vent. t. 106. (Glycine bimaculata; Curt. Mag. t. 263. Willd. Sp. Pl. v. 3. 1067. G. violacea; Schneev. Ic. t. 29.)—Leaves fimple, fmooth, reticulated; fomewhat heart-fhaped at the bafe. Flowers racemofe. Difcovered by fir J. Banks, in New South Wales. Introduced into England with the laft. *Flowers* violet, with two green fpots on the *keel.*

Mr. Brown appears to have fome unpublifhed fpecies.

KENNET. Add—It contained, in 1810, 947 inhabitants.

KENSINGTON, l. 4, 1811—1379—10,886.

KENSINGTON, in America, l. 4, *r.* 781.

KENT, l. 19, &c. *r.* In 1811, Kent contained 62,063 houfes, 373,095 perfons; 183,500 being males, and 189,595 females.

KENT, in America, l. 4, *r.* 11,450; l. 5, *r.* 4249; l. 13, *r.* 9834; l. 24, *r.* 1794.

KENT, *New.* See NEW *Kent.*

KENTUCKY. Add—See UNITED STATES.

KERBALA. See VOLOGESIA.

KERKUK, or KERKOOK, the largeft town in the lower Kurdiftan, in N. lat. 35° 29′, 59 furfungs from Bagdad, and 41 from Moful, on the road from one place to the other. It was formerly a military ftation, called by Strabo, Demetrias; and by Ptolemy, Corcura. Its population is eftimated at 18,000 fouls, Turks, Armenians, Neftorians, Kurds: this eftimate, however, is fuppofed to exceed the truth by 5000. The city is defended by a mud wall, has two gates, feven mofques, fourteen coffee-houfes, one hummum, one caravanfera, one Armenian church, and twelve pieces of ufelefs artillery mounted on the baftions. In the fuburbs, are five mofques, nine fmall caravanferas, thirteen coffee-houfes, three convents, and three Catholic churches. Near it is a number of naphtha pits, which afford an abundant fupply of that commodity.

KERMANSHAW, one of the five diftricts of the province of Irak in Perfia; the capital of this extenfive and fruitful diftrict of the fame name, and the refidence of Mahomet Ali Meerza, the king's eldeft fon, and the moft able and warlike of all the princes of Perfia. It is a flourifhing town, containing about 12,000 houfes, at the extremity of a fine plain, through the centre of which runs the Karafu. It is adorned with many gardens, and fourteen hummums or public halls, four mofques, and yields a revenue of 15,000 tomauns a year.

KERRIA, in *Botany*, fo named after Mr. William Kerr, a gardener, who has introduced the fhrub in queftion, with many other Chinefe plants, into the Englifh gardens.—De Candolle Tr. of Linn. Soc. v. 12. 156.—Clafs and order, *Icofandria Polygynia.* Nat. Ord. *Senticofæ*, Linn. *Rofaceæ*, Juff.

Eff. Ch. Calyx in five fimple fegments. Petals five. Capfules? fuperior, diftinct, fingle-feeded.

1. K. *japonica.* Japan Kerria. De Cand. (Rubus japonicus; Linn. Mant. 245. Corchorus japonicus; Thunb. Jap. 227. Ait. Hort. Kew. v. 3. 314. Andr. Repof. t. 587. Curt. Mag. t. 1296.) See RUBUS under n. 38, and CORCHORUS, n. 12.—A correct examination of the *germens* has authorifed the learned profeffor De Candolle to confider this favourite plant as a new genus, though the precife nature of its feed-veffels is not known.

KERSHAW, l. 3 and 4, *r.* 9867—4847.

KESWICK, l. 7, *r.* 352—1683.

KETTERING, l. 24, &c. *r.* 1811—713—3242—587—126.

KETU, l. 4, for Karyapa *r.* Kafyapa. Col. 2, l. 4, for or *r.* a.

KEW, l. 4 and 5, *r.* 1811—73—560.

KEYNSHAM, l. 4 and 5, *r.* 1811; the parifh confifted of 318 houfes, and contained 1748 inhabitants.

KHARASM, col. 2, l. 3, *r.* (See KHIEVA.)

KHOEE, a town of Perfia, in the province of Azerbijan, 22 furfungs from Tebreez. This town is the capital of a rich and extenfive diftrict, and the emporium of a confiderable trade carried on between Turkey and Perfia. It is faid to contain a population of 25,000 fouls, and is fituated on a plain, famous for a battle fought, in 1514, between Shah Ifmael and Selim I. in which 30,000 Perfians encountered 300,000 Turks. There is no town in Perfia better built or more beautiful than Khoee: the walls are in good repair; the ftreets are regular, fhaded with avenues of trees; and the ceilings of many of the houfes are painted with extraordinary tafte.

KHONSAR, a town of Perfia, in the province of Irak, fituated at the bafe of two ranges of mountains, running parallel with each other, and fo clofe that the houfes occupy the bottom and alfo the declivity of the hills to fome height. The town, placed in a beautiful and romantic fituation, and formed of houfes and gardens, connected by means of its plantations, is about fix miles in length, and about one-fourth of a mile in breadth. It contains 2500 families under a chief named Ali Shah, and yields an annual revenue of 5000 tomauns, exclufive of the fadir, which generally confifts of dried fruits and a kind of cotton chintz. Although they have no corn in the valley, fruit is fo abundant, that the inhabitants procure for it every article which they can want or defire. Of their apples, they make a kind of cyder, but it will not keep above a month. The women are celebrated for their beauty and vivacity.

KHORASSAN. Add—Khoraffan is a level country, interfperfed with fandy deferts, and irregular ridges of lofty mountains; the climate is accordingly various; in fome parts temperate, but in others very cold; and the "had-e-femum," which blows in the deferts for 40 days in the year, proves inftantaninstantaneously fatal to all who are exposed to it. This province was once populous and flourishing, and adorned with many princely cities. The soil is generally excellent, and produces wine, fruit, corn, rice, and silk in abundance, and of the best quality; but from the successive depredations which it has suffered, its prosperity and commerce have declined; its cities have decayed; and its fertile regions have been changed into solitary deserts. At present the authority of the king of Persia extends only over the cities of Meshed, Nishapour, Turshish and Tabas. The southern parts, including Herat, are in possession of the Afghans, and some wandering tribes of Patans and Ymucks; and those to the E. and N. belong to the Usbeck Tartars and Tarkomans. Khorassan is separated from Cabul by the mountains of Bamian and Goor. Its rivers are, the Oxus, the Tedzen or ancient Ochus, the Herirood, the Murgah or ancient Margus, the Esler or ancient Siderius, from which the province of Afterabad derives its name, and which runs into the Caspian sea. The provinces of Irak and Khorassan are separated by a deep ravine, which intersects the road leading from Tehraun to Meshed, 22 fursungs E. of the former place. The districts in this direction are, Sumnum, Damgan, and Bistan. The present capital of the Persian division of Khorassan is Meshed. That part of Khorassan which extends from N. lat. 32° 30′ to 34° 40′, from 56° to 62° E. long., comprehends the following towns and districts, *viz.* Pushing, Zuzan, Turshish, Turbut, Jam, Kohistan, Nishapour, and Sarukhs. M'Kinneir's Persia.

KIBBAN, surnamed Madan from its mines, a town of the pachalic of Diarbekr, larger and more populous than Argunna Madan; situated at the base of a high mountain, and on the verge of a chasm, through which a stream forces its way to the Euphrates, distant about 1½ mile from the town.

KIDDERMINSTER, l. 5 and 6, *r.* 1811—1348—8038.

KIDWELLY, l. 5, *r.* 1811—329—1441; l. 10, add—The vicinity is rich in coals and iron-ore, and some iron and tin manufactories have long been carried on here; l. 11, *r.* condition; l. 13, add—Its markets are held on Tuesday and Friday, and it has three fairs in the year.

KIGES, a town of Ohio, in Gallia county, having 387 inhabitants.

KILBARCHAN. Add—By the parliamentary returns of 1811, the parish contained 360 houses, and 3563 inhabitants.

KILBIRNIE, for Renfrewshire *r.* shire of Ayr. In 1811, the parish contained 180 houses, and 1088 persons; *viz.* 509 males, and 579 females.

KILBRIDE. Add—In 1811, the town and parish contained 517 houses, and 2906 persons.

KILBRIDE, *West.* In 1811, the parish contained 183 houses, and 1015 persons; *viz.* 462 males, and 553 females: 76 families being employed in agriculture, and 108 in trade and manufactures.

KILKENNY, in America, l. 1, for Grafton *r.* Coos; l. 2, *r.* 28.

KILLBUSH, a township of Stark county, in Ohio, having 332 inhabitants.

KILLEARN, for KILLEAM, l. 1, and l. 3, add—In 1811, the parish contained 157 houses, and 997 persons.

KILLINGLY, l. *ult.* *r.* 2512.

KILLINGWORTH, l. *ult.* *r.* 2244.

KILMARNOCK, l. *ult.* *r.* In 1811, the town and parish contained 912 houses, and 10,148 inhabitants, of whom 1363 families were employed in trade and manufactures.

KILMAURS, a parish of Ayrshire, which, in 1811, contained 248 houses, and 1432 persons; *viz.* 685 males, and 747 females: 61 families being employed in agriculture, and 142 in trade and manufactures.

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KILPATRICK. The parish of New or East Kilpatrick contained, in 1811, 205 houses, and 1643 persons; *viz.* 746 males, and 897 females. The parish of Old or West Kilpatrick contained 370 houses, and 3428 persons; *viz.* 1595 males, and 1833 females. In the former, 81 families were employed in agriculture, and 120 in trade and manufactures: in the latter, 95 families were engaged in agriculture, and 557 in trade, &c.

KILSYTH. In 1811, the parish of Kilsyth contained 626 houses, and 3206 persons; *viz.* 1488 males, and 1718 females.

KILWINNING. In 1811, the parish contained 506 houses, and 3291 persons; *viz.* 1607 males, and 1684 females.

KIMBOLTON, l. 4, *r.* 1811; l. 5, *r.* 260—1400.

KINCARDINE. By the parliamentary returns of 1811, the parish of Kincardine, in Monteith, with Thornhill, contained 479 houses, and 2419 persons.

KINCARDINESHIRE, col. 2, l. 8, after Bervie, add—which burgh and parish, in 1811, contained 193 houses, and 927 persons; l. 46, *r.* 1811; l. 47, *r.* 5718—27,439; add—12,580 being males, and 14,859 females.

KINETON, l. 12, *r.* In 1811, the hundred contained 4066 houses, and 19,459 persons; and the parish 166 houses, and 801 inhabitants. Add—See KINGTON.

KING *and Queen*, l. 3, *r.* contains 10,989 inhabitants, of whom 6003 were slaves in 1810.

KING *George*, l. 3, *r.* 6456, of whom 3876 were slaves in 1810.

KINGHORN. Add—In 1811, the burgh and parish contained 329 houses, and 2204 persons.

KINGSBRIDGE, l. 9, *r.* 1811—156—1242.

KINGSCLERE, l. 9, *r.* 1811—398—1863—53 families; l. 15, *r.* 1137.

KINGSTON, in America, l. 12, *r.* 324. Col. 2, l. 3, *r.* 746. Add—Also, East Kingston, a township of the same county and state, having 442 inhabitants; l. 12, *r.* 832.

KINGSTON-*upon-Thames*, l. *ult.* *r.* 1811—716—4144.

KINGTON, l. 2, *r.* Huntingdon; l. 11, *r.* 1811—1617—329. See KINETON.

KING WILLIAM, a county of Virginia, containing 9285 inhabitants, of whom 5788 were slaves in 1810.

KINGWOOD, l. 1, *r.* Hunterdon; l. 2, *r.* 2605—48.

KINROSS, l. 4, *r.* The number of inhabitants of this parish, in 1811, was 2214, of whom 287 families were employed in trade and manufactures, and 92 in agriculture: the number of houses was 396.

KINROSS-SHIRE, col. 2, l. 9, *r.* 1811, as containing 1364 houses, and 7245 persons.

KINTORE, l. 11, *r.* 1811, the burgh and parish contained 218 houses, and 863 persons.

KINTYRE, l. 1, *r.* six for three; l. 2, six for three; l. 3, after *viz.* add—Argyll, Corrall, Islay, Kintyre, Lorn, and Mull. The first district contained, in 1811, 2702 houses, and 15,637 persons; Corrall, 1212 houses, and 6887 persons; Islay, 2636 houses, and 14,161 persons; Kintyre, 2959 houses, and 18,286 persons; Lorn, 2721 houses,

houses, and 13,779 persons; and Mull, 3010 houses, and 16,834 persons.

KIRCALDY, col. 2, l. 25, *r.* In 1811, the number of inhabitants in the burgh and parish was 3747, occupying 381 houses, of whom 405 families were employed in trade and manufactures, and 36 in agriculture: the number of houses in the whole district was 4899, and of inhabitants 31,958.

KIRKBY-Lonsdale, l. 5, *r.* In the year 1811, the town contained 271 houses, and 1368 persons.

Kirkby-*Moorside*, l. 6, *r.* 1811—319—1673.

Kirkby-*Stephen.* Add—By the return of 1811, the township contained 250 houses, and 1235 persons.

KIRKCUDBRIGHT, l. *ult. r.* In 1811, the number of houses in the burgh and parish was 392, and of inhabitants 2763.

KIRKCUDBRIGHTSHIRE, col. 2, l. 8, *r.* 1811—33,684 persons; 15,788 being males, and 17,894 females: the number of houses being 6223.

KIRKHAM, l. 6, *r.* 1811—424—2214.

Kirkham, a township of Amounderness hundred, in Lancashire, part of Kishen parish, containing, in 1811, 424 houses, and 2214 persons; *viz.* 1039 males, 1175 females.

KIRKINTULLOCH, l. *penult. r.* In 1811, the number of houses was 605, and of persons 3740; of whom 573 families were employed in trade and manufacture.

KIRK-OSWALD. At the end, add—In 1811, the number of houses in this township was 116, and of inhabitants 636.

KIRKWALL. Add—The burgh and parish of Kirkwall contained, in 1811, 287 houses, and 1715 persons.

KIRMANSHA. Add—See Kermanshaw.

KIRRIEMUIR, l. 12 and 13—1811, the town and parish were returned as containing 955 houses, and 4791 persons.

KIRTON, l. 6, *r.* In 1811, it contained 307 houses, and 1531 persons.

Kirton *Lindsay*, l. 5, 1811—258—1152.

KITTERY, l. 3, *r.* 2019.

KIZIL-OZAN. Add—This river, called the Golden Stream, is the natural boundary of Irak and Azerbijan, and, according to Rennell, the Gozan of scripture.

KNARESBOROUGH, col. 4, l. 15, *r.* The population of the borough and township, as returned to parliament in 1811, was 4234, occupying 888 houses.

KNEE, in the *Manege*, add—Broken knees very much depreciate the value of a horse; and therefore various methods have been proposed for repairing and correcting this injury. Mr. Teplin recommends, first of all, to wash the injured parts well with a sponge and warm water, so as thoroughly to cleanse them from gravel or sand; and then plentifully embrocating them with camphorated lead-water, and bandaging over them a pledgit of tow moistened with the same, repeating the operation once or twice, if necessary. This treatment should be continued, that a crust or cicatrix may be formed, which will render unctuous or greasy applications unnecessary. But if the laceration be considerable, suppuration will ensue, and should be encouraged by a common poultice, and the cure completed by digestive ointments. Mr. Lawrence proposes to make the hair grow after such accidents, by binding a piece of sheet-lead on the part after the wound is healed; and he also mentions a contrivance by which the knees of a valuable horse may be preserved from this accident. (See Hose.) He advises to wash the wound clean with a linen rag and warm soap-suds, and having wiped the parts dry to apply brandy. Friar's balsam (compound tincture of benzoin) will, he says, heal broken knees very speedily. A kind of hose, or boots, is used to defend the legs of race-horses in travelling; and some kind of guard, fastened above and below the knee, would be very useful to post-horses. For broken knees, Mr. Ryding recommends a mixture of 1 dr. of cantharides in fine powder with 1 oz. of olive-oil, which should be applied occasionally with the hand to the wounded part. This, he says, by its gently stimulating power, will brace the parts, promote the sore, and facilitate the growth of hair.

KNIGHTIA, in *Botany*, so named by sir Joseph Banks and Mr. Brown, in honour of Thomas Andrew Knight, esq. the able president of the Horticultural Society, well known by his numerous writings on vegetable physiology.—Br. Tr. of Linn. Soc. v. 10. 193.—Class and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juss. Br.

Eff. Ch. Calyx none. Petals four, equal, revolute. Stamens inserted above the middle of each petal. Nectary of four glands. Germen sessile, four-seeded. Stigma vertical, club-shaped. Follicle coriaceous, tipped with the style. Seeds winged at the summit.

1. K. *excelsa.* Br. as above, t. 2.—Found by sir J. Banks, in New Zealand. A large *tree*, often eighty feet high. *Leaves* scattered, stalked, elliptic-lanceolate, serrated, five or six inches long; downy beneath. *Flowers* red, in dense lateral clusters, with red *stalks*. This genus comes very near Aublet's and Schreber's Rhopala, (see that article,) differing only in having four *seeds* winged at the apex, instead of two winged all round.

KNOWLTON, l. 2, *r.* 2064 inhabitants, including 17 slaves in 1810.

KNUTSFORD, l. 5 from the bottom, *r.* In 1811 there were in the township of Nether Knutsford 448 houses and 2114 persons, and in Over Knutsford 49 houses and 243 persons, of whom in the former township 276 and in the latter 37 were employed in trade, manufacture, and handicraft.

KOM, l. 4, add—It is said to have been built in the year 203 of the Hegira, from the ruins of seven towns, which had composed a small sovereignty under Abdalrahman, an Arabian prince:—l. 19, after khan, add—It was taken by the Afghans, when they invaded Persia in 1722, and completely destroyed. Part of it has been since rebuilt, but it still appears like a vast ruin.

KORASAN, or Khorassan. Add—See Khorassan.

KORNA. See Shat-ul-Arab.

KOUMISS, an intoxicating drink, prepared by the Tartars from mare's milk. See Milk.

KRISHNA, l. 21 and 24 from the bottom, for Gapia *r.* Gopia; l. 18, for Tasuda *r.* Yasuda.

KROOK. See Regan.

KUFA, a kind of boat in use on the Euphrates and Tigris; it is perfectly round, made of wicker-work, covered with bitumen, and generally about seven feet in diameter.

KUFRI, in *Geography*, a town of Persia, in the pachalic of Bagdad, between Bagdad and Kerkook, containing about 2000 inhabitants.

KUPRI-Altun. See Altun-*Kupri*.

KURMAVATARA, l. 18 from the bottom, for beautiful *r.* bountiful.

KYANITE. See Mineralogy, *Addenda*.

KYDIA, in *Botany*, so called in memory of the late colonel Robert Kyd, first director of the Calcutta garden. —Roxb. Corom. v. 3. 11.—Class and order, *Monadelphia Dodecandria.* Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juss.

Eff. Ch. Calyx double; outer of four or six leaves. Petals five. Anthers in five tufts. Style three-cleft. Capsule of three cells, and three valves. Seeds solitary.

1. K. *calycina.*

1. K. *calycina.* Roxb. t. 215.—Outer calyx four-leaved, longer than the corolla.—Native of the banks of rivulets, in Coromandel and Hindooſtan, flowering in the cool ſeaſon. A *tree*, with long-ſtalked, roundiſh, mealy, ſlightly three-lobed *leaves*. *Flowers* ſmall, white, in terminal panicles.

2. K. *fraterna.* Roxb. t. 216.—Outer calyx ſix-leaved, ſhorter than the corolla.—Native of the Circar mountains, flowering in the rainy ſeaſon. A larger *tree* than the foregoing. *Flowers* more conſpicuous. *Leaves* whiter underneath.

L.

LABORATORY. *Woulfe's Apparatus*, *Plate* V. *Chemiſtry.*

LAC, in *Coinage.* See Lack and Rupee.

LACK, in *Geography*, l. 2, *r.* 1165.

LACKAWANACT, a townſhip of Mercer county, in Pennſylvania, having 379 inhabitants.

LACTATES, in *Chemiſtry.* See Lactic *Acid.*

LACTIC Acid. The deſcription of this acid has been omitted, we ſhall therefore introduce a brief account of it here.

The lactic acid was firſt obtained by Scheele from ſour whey. He conſidered it as analogous to the acetic acid. Bouillon Lagrange afterwards inſtituted a ſeries of experiments upon it, from which he drew the concluſion that it is merely acetic acid, contaminated with ſome ſaline and animal matter. Four years afterwards, Thenard advanced a ſimilar opinion. Both theſe chemiſts, however, had obtained the acid which they examined by diſtillation, though Scheele had expreſsly ſtated that lactic acid, when diſtilled, was converted into acetic acid. The exiſtence of lactic acid, therefore, was by no means diſproved by their experiments. Soon afterwards, Berzelius took up the ſubject, and in an elaborate ſet of experiments proved that Scheele's original opinion was correct, and thus fully eſtabliſhed the peculiar nature of lactic acid.

Berzelius obtained the lactic acid by the following complicated proceſs. The extract obtained by evaporating whey to dryneſs was diſſolved in alcohol, and mixed with alcohol holding $\frac{1}{20}$th of its weight of concentrated ſulphuric acid in ſolution, till there was an exceſs of ſulphuric acid preſent. Sulphate of potaſh was precipitated. To get rid of the other acids, it was digeſted over carbonate of lead till the liquid acquired a ſweetiſh taſte. By this means, the ſulphuric acid, the phoſphoric acid, and moſt of the muriatic acid, were ſeparated; but the lactic acid forming a ſoluble compound with lead remained in ſolution. A current of ſulphuretted hydrogen gas being paſſed through the liquid threw down the lead. The liquid was digeſted over quick-lime till all the animal matter was ſeparated. It now contained only lactic acid, muriatic acid, and lime. A portion of it was freed from lime by means of oxalic acid. This portion was then ſaturated with carbonate of ſilver; by means of this ſolution, the remainder of the liquid was freed from muriatic acid. Finally, the lime was thrown down by means of oxalic acid, ſo that nothing remained but lactic acid diſſolved in water. To get rid of a ſmall portion of oxalate of lime which it held in ſolution, it was evaporated to dryneſs, and rediſſolved in water.

Lactic acid thus obtained has a browniſh-yellow colour, and a ſharp ſour taſte, which is much weakened by diluting the acid with water. While cold it has no ſmell, but when heated it acquires a ſharp ſour odour, not unlike that of ſublimed oxalic acid. It does not cryſtallize, but when evaporated to dryneſs forms a ſmooth varniſh, which gradually attracts moiſture from the air. It diſſolves readily in alcohol. When heated it boils, emits a ſour ſmell, and leaves a bulky charcoal, not eaſily burnt. When diſtilled it gives out empyreumatic oil, water, acetic acid, carbonic acid, and inflammable gas.

Lactates.—All the lactates are more or leſs ſoluble in water, and hardly any of them can be made to cryſtallize. The *lactate of potaſh* and *lactate of ſoda* form a light yellow tranſparent gummy maſs, which cannot be eaſily made hard. The *lactate of ammonia* has ſome tendency to cryſtallize. It forms a gummy maſs, which acquires in the air an exceſs of acidity. When heated, moſt of the ammonia is driven off. The *lactates of barytes*, *lime*, and *magneſia*, are divided by alcohol into *ſuperlactates* of thoſe earths which are ſoluble in alcohol, and into *ſublactates* which are inſoluble. The metallic lactates do not poſſeſs remarkable properties. There are three *lactates of lead;* the *ſuperlactate* which does not cryſtallize, the *lactate* which exiſts in grey cryſtalline grains, and the *ſublactate* which is inſoluble. The *lactate of zinc* cryſtallizes.

Dr. Thomſon eſtimates the weight of the atom of lactic acid from Berzelius's experiments at 57.5.

Such are the chief properties of lactic acid and its compounds. We have entered further into the deſcription than we ſhould otherwiſe have done, on account of the importance of the ſubject,—the lactic acid exiſting both in a ſimple and combined ſtate in moſt of the animal fluids. See Blood, and Fluids, *Animal.*

LACTODORUM, in *Ancient Geography.* See Towcester.

LACTUCARIUM, a name given by Dr. Duncan to the inſpiſſated juice of the *lactuca ſativa*, or common lettuce, and which has been found beneficial in various diſorders, eſpecially conſumption, as an anodyne, where opium diſagreed and could not be taken.

LADY-BIRD. See Coccinella.

LAFOURCHE, in *Geography*, a county of the territory of of Orleans, containing in its interior, and in the pariſh of Aſſumption, 4467 inhabitants.

LAGASCA, in *Botany*, after Don Mariano Lagaſca, the worthy pupil, and now ſucceſſor, of profeſſor Cavanilles at Madrid.—Cavan. in Ann. de Cienc. Nat. v. 6. 331. Sims in Curt. Mag. 1804. (Lagaſcea; Willd. Enum. 941.)—Claſs and order, *Syngeneſia Polygamia-ſegregata*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Involucrum a ſimple row of leaves. Partial calyx five-toothed, ſingle-flowered. Florets tubular, all perfect. Receptacle cellular, very hairy. Seed-down none.

1. L. *mollis*. Soft-leaved Lagaſca. Curt. Mag. t. 1804. —Native of Cuba. A tender annual, of little beauty. *Herb* downy, very ſoft. *Leaves* ſtalked, ovate, toothed; the lower ones oppoſite. *Flowers* terminal, white.

LAHORE, l. 10, for Schauguive *r.* Shah Jehan.

LAKE, a town of Champaign county, in Ohio, containing 480 inhabitants.

LAKSHMI, col. 3, l. 4, for deities *r.* deity's wives.

LALESTON, *Higher* and *Lower*, in *Geography*, form a pariſh of Newcaſtle hundred in Glamorganſhire. The Higher in 1811 contained 34 houſes, and 157 perſons; 81 being males, and 76 females: and the Lower contained 62 houſes, and 271 perſons; 111 being males, and 160 females.

LAMBETH, l. 25, *r.* 1811—7201; l. 24, *r.* 41,644, and 4491; l. 27, *r.* 338.

LAMBOURN, l. 13 and 14, *r.* In the year 1811, the population of the pariſh, with its dependent hamlets, *viz.* Blagrave and Halley, Eaſtbury and Bockhampton and Upper Lambourn, was 2674 perſons, and the number of houſes 527.

LAMP, Aphlogistic. Sir Humphrey Davy, during his reſearches on flame with the view to the conſtruction of his ſafety-lamp for coal-mines (ſee Wire-Gauze), obſerved, that a fine platinum wire heated red hot and held in the vapour of ether would continue ignited. Soon after this curious fact was made known, Mr. Ellis of Bath thought of extending the principle, and found that a coil of fine platina wire, ſtuck into the wick of a common ſpirit-lamp (being previouſly heated), might be kept red hot for any length of time. The lamp ſo conſtructed received the appellations of *aphlogiſtic lamp*, *lamp without flame*, &c.

The platinum wire for this experiment ſhould not exceed $\frac{1}{100}$th part of an inch in diameter. About twelve coils of this (the coil being about $\frac{3}{10}$ths of an inch in diameter, and as cloſe together as poſſible without touching) are to be placed upon the wick of a common ſpirit-lamp, in ſuch a manner that half be on the wick and half above it; the lamp is then to be lighted, and when the wire has become red hot the flame is to be blown out; the wire will then remain red hot for any length of time required, and in a dark room, if properly conſtructed, will emit a conſiderable light. Inſtead of alcohol, ether may be employed, or a ſimilar effect may be produced by ſticking the ignited wire into a piece of camphor.

LAMP, *Safety*, for coal mines. See Wire-Gauze.

LAMPETER, l. 2, *r.* 2501.

LAMPIC Acid, in *Chemiſtry*. The name recently given by Mr. Daniell to an acid generated by the combuſtion of alcohol, &c. by the aphlogiſtic lamp.

Sir Humphrey Davy obſerved, during the combuſtion of ether in the manner above deſcribed, the formation of a peculiar acid pungent vapour, which he conſidered as a new product. Mr. Faraday ſoon afterwards deſcribed ſome of the properties of this acid, and more recently Mr. Daniell has given us a more full deſcription. Mr. Daniell prepared it for his experiments by burning the aphlogiſtic lamp under an alembic head, and collecting the products; but we underſtand it may be formed much more readily by paſſing the vapour of ether through a tube containing platinum wire. The lampic acid, when as pure as poſſible, is a colourleſs fluid, of an intenſely ſour taſte and pungent odour. Its vapour when heated is extremely irritating and diſagreeable, and produces an oppreſſion on the cheſt, ſomething like that produced by chlorine. It reddens vegetable blues, and decompoſes all the earthy and alkaline carbonates. Its ſp. gr. when rectified as highly as poſſible, according to Mr. Daniell, is 1015.

The *Lampates of Potaſh and Soda* are deliqueſcent ſalts, and do no not readily cryſtallize. The *lampate of ammonia* is volatile, and eaſily decompoſed. The *lampate of barytes* readily cryſtallizes in colourleſs tranſparent needles. The *lampates of lime* and *magneſia* are deliqueſcent.

The lampic acid has the property, according to Mr. Daniell, of reducing many of the metallic oxyds; this is particularly the caſe with the oxyds of gold and mercury. When warm nitrate of mercury, according to Mr. Daniell, is mixed with lampic acid, a metallic ſhower takes place, and brilliant globules of mercury ſoon accumulate at the bottom of the veſſel.

Mr. Daniell eſtimates, from his experiments, the weight of the atom of lampic acid at about 64, and conſiders it as compoſed of 1 atom hydrogen + 1 atom carbon + 1 atom water. How far theſe determinations are to be depended upon we cannot ſay, though we think it probable that they are incorrect.

LANARK, l. *ult.* *r.* 1811—5677—658.

LANARKSHIRE, l. 13, *r.* according to the parliamentary returns in 1811, the population of the county conſiſts of 191,752 perſons, occupying 32,040 houſes; the males are 88,688, and the females 103,064: the families employed in trade, manufactures, and handicraft, are 27,672, and thoſe employed in agriculture 5387.

LANCASHIRE, l. 21, *r.* 1811—144,283—828,309; l. 22, *r.* 114,522; l. 23, *r.* 23,305. The number of males was 394,104, and that of the females was 434,205.

Lancashire. This county contains ſeveral villages and pariſhes, which, by the prevalence of its manufactures, are become populous, but which our limits will not allow us to mention.

Aſhton-under-Lime (omitted in its proper place) deſerves a particular notice as a pariſh in the hundred of Salford, which in 1811 contained 3042 houſes, and 19,052 perſons, *viz.* 9146 males, and 9906 females; 213 families being employed in agriculture, and 2737 in trade, manufactures, or handicraft.

Aſhton-in-Mankerfield is alſo a townſhip in the hundred of Weſt Darby and pariſh of Winwick, which contains 864 houſes, and 4747 perſons; *viz.* 2342 males, and 2405 females: 163 families being employed in agriculture, and 726 in trade, manufactures, &c.

LANCASTER, col. 4, l. 26 from bottom, *r.* 1811; l. 25, *r.* 1694 and 9247.

Lancaster, in America, l. 5, *r.* 3927—44. Col. 2, l. 5, *r.* 5592 inhabitants, of whom 3112 were ſlaves in 1810; l. 7, *r.* 6318; l. 8, *r.* 1646; l. 18, add—and by the cenſus of 1810, 5405 inhabitants, including 700 ſlaves; l. 31, add— Alſo, a townſhip of the ſame county, containing 592 inhabitants:—l. 43, *r.* 1694; l. 44, for Grafton *r.* Coos; l. 47, *r.* 1810, and 717.

LANDAFF, l. 2, *r.* 650.

LANDGROVE, a town of Bennington county, in Vermont, having 299 inhabitants.

LANDSCAPE, l. *penult.* *r.* wherein. Col. 2, l. 6 from bottom, *r.* aims.

LANESBOROUGH, l. 3, *r.* 1302.

LANGAYA, a genus of ferpents, the characters of which are, that it has abdominal plates, caudal rings, and terminal fcales. Of this genus there is only one fpecies, differing from all the reft of the ferpent tribe in having the upper part or beginning of the tail marked into complete rings, or circular divifions, refembling thofe on the body of the amphis bæna, while the extreme or terminal part is covered with fmall fcales, as in the genus anguis. This fpecies is called Langaya nafuta, or large-fnouted Langaya, has 184 abdominal fcales, and 42 caudal rings: it is a native of Madagafcar, and was firft defcribed by M. Bruguiere of the Royal Society of Montpellier. The natives of Madagafcar are much afraid of this ferpent, as they conceive it to be very poifonous.

LANGDON, l. 3, *r.* 632.

LANGHOLM, l. 5, *r.* 1811, 2636 perfons, occupying 522 houfes.

LANGPORT, col. 2, l. 3, *r.* 1811—112; l. 4, *r.* 861.

LANTWIT, MAJOR, a parifh of Cowbridge hundred, in the county of Glamorgan, containing, in 1811, 179 houfes, and 786 perfons; *viz.* 357 males, and 429 females.

LANTWIT, *Lower*, a parifh near Neath, which, in 1811, contained 116 houfes, and 564 perfons; *viz.* 265 males, and 299 females.

LAR, l. 6, add—It ftill contains about 12,000 inhabitants, celebrated for the manufacture of mufkets and cotton cloth. It has very handfome buildings, and particularly a bazaar, that is reckoned the nobleft ftructure in Perfia. N. lat. 37° 30′. E. long. 52° 45′. See TAREM.

LARISTAN, l. 1, after Perfia, add—extending along the Northern fhore of the gulf from E. long. 55° to 58°.

LARUS, col. 3, *r.* RIDIBUNDUS.

LASCAR, a term in India, denoting a camp-follower, but applied to native failors and artillerymen.

LASCO, JOHN. Add—A brief account has already been given of this famous reformer under ALASCO.

LASSUS. See ORLANDO.

LATIMORE, in *Geography*, a townfhip of Adams' county, in Pennfylvania, having 666 inhabitants.

LAUD, l. 10 from bottom, *r.* Stanford.

LAVENHAM, at the clofe, *r.* 1811—308, and 1711.

LAUGHTER, l. 15, add—See LUNGS.

LAVINGTON, *Eaft*, l. 11, *r.* 1811; l. 12, *r.* 899—184; l. 16, for Whorlfdon *r.* Pottern and Cannings; l. 17, *r.* 1811—127; l. 18, *r.* 582.

LAUNCESTON, col. 2, l. 4 and 3 from the end, *r.* 1811—1758, and 262.

LAUREAT, POET, l. 5, add—In anciently conferring degrees in grammar, which included rhetoric and verfification, at our univerfities, particularly at Oxford, a wreath of laurel was prefented to the new graduate, who was afterwards ufually ftyled "Poeta Laureatus." Thefe fcholaftic laureations feem to have given rife to the appellation:—l. 19, after Edw. IV. infert—who appointed John Kay poet laureat, and who, according to Warton, was the king's firft poet under this appellation. The only compofition he has tranfmitted to pofterity is a profe Englifh tranflation of a Latin hiftory of the fiege of Rhodes. In the dedication, addreffed to king Edward, or rather in the title, he ftyles himfelf *hys humble poete laureate.* The fame appellation occurs under, &c. At the clofe, add—Warton's Hift. of Englifh Poetry, vol. i. p. 128.

LAUROPHYLLUS, in *Botany*, an exceptionable compound name.—Thunb. Prodr. præf. n. 16. Willd. Sp. Pl. v. 4. 1115. Ait. Hort. Kew. v. 5. 481.—Clafs and order, *Tetrandria Monogynia.* Nat. Ord. . . . .

Eff. Ch. Calyx four-cleft, inferior. Corolla none. Some male flowers.

1. L. *capenfis.* Thunb. Prodr. 31. Willd. n. 1. Ait. n. 1.—Found at the Cape of Good Hope. A *tree*, with round, brown, fhining *branches*; alternate, oblong, ferrated, fmooth, coriaceous *leaves*; and minute *flowers*, in terminal *panicles.*

LAUSANNE, in *Geography*, a townfhip of Northampton county, in Pennfylvania, having 157 inhabitants.

LAWSVILLE, a townfhip of Luzerne county, in Pennfylvania, having 169 inhabitants.

LEAD, in *Chemiftry.* According to the moft recent determinations, *mafficot*, or the *protoxyd* of lead, is a compound of 100 lead + 7.692 oxygen; and the *brown* or *peroxyd*, of 100 lead + 15.384 oxygen. Hence the weight of the atom of lead will be 130, oxygen being 10. From thefe data, the compofition of all the other compounds of lead can be eafily eftimated. See ATOMIC *Theory.*

What is ufually called *minium*, or *red-lead*, is a combination of thefe two oxyds, or of 2 atoms lead + 3 atoms oxygen. *Red-lead* does not appear capable of combining with acids, at leaft no falt of which it forms a conftituent is at prefent known.

LEAD, page 10, c. 2, l. 3, after gallic, read acid.

LEAD-ORES. See LEAD, and MINERALOGY, *Addenda.*

LEATHERHEAD. In 1811 the parifh contained 312 houfes, and 1209 perfons; *viz.* 580 males, and 629 females: 75 families being employed in agriculture, and 103 in trade, manufactures, and handicraft.

LEBANON, in America, l. 3, *r.* 1810; l. 4, *r.* 1938; l. 8, *r.* 2580; l. 11, 1810; l. 12, *r.* 1808. Col. 2, l. 3, add—containing 1434 inhabitants.—Alfo, a townfhip in the fame county, containing 2473 inhabitants.—Alfo, a town of Hunterdon county, in New Jerfey, containing 2409 inhabitants.

LEBECKIA, in *Botany*, Thunb. Prodr. præf. n. 47. Willd. Sp. Pl. v. 3. 946. Ait. Hort. Kew. v. 4. 261.—Clafs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Calyx in five deep acute fegments, with rounded finufes. Stamens all connected. Legume cylindrical, with many feeds.

Thunberg and Willdenow defcribe three fpecies with fimple, and five with ternate, *leaves*, all fhrubs, found at the Cape of Good Hope. Three are in Hort. Kew. *L. contaminata*, *fericea*, and *cytifoides*, all previoufly referred to SPARTIUM; fee that article.

LECANORA, Ach. Syn. 146. "Lichenogr. 77. t. 7. f. 3—7;" a new genus, confifting of 139 fpecies, of the *Lichen* tribe, being the cruftaceous fpecies of PARMELIA; fee that article.

LECHLADE, l. 16 from bottom, *r.* 1811; l. 15, *r.* 993; l. *ult.* *r.* 195.

LECIDEA, in *Botany*, Ach. Syn. 11. "Lichenogr. 32. t. 2. f. 1—7." A genus of *Lichenes*, chiefly the *tuberculati* of Linnæus, whofe fhields have no border from the fubftance of the *frond* or *cruft*, 153 fpecies are now defcribed, whofe *fronds* are various.

LEDBURY, col. 2, l. 17, *r.* 1811—3136; l. 18, *r.* 604.

LEDYARD, col. 2. l. 39, *r.* Ochotofk.

LEE, in Virginia, l. 6, *r.* 4694 inhabitans, of whom 336 were flaves in 1810; l. 10, *r.* 1329; l. 12, *r.* 1305.

LEE, a long meafure in China, rather more than one-third of a mile.

LEEDS, col. 2, l. 25, *r.* 1811, the town and liberty contained

contained, &c.; l. 26, *r.* 12,249 and 62,534; l. 27, *r.* 11,739 families were ftated, &c.

LEEDS, in America, l. *ult.* *r.* Kennebeck for Cumberland; after county, add—containing 1273 inhabitants.

LEEKE, l. 7, *r.* 1811—832; l. 8, *r.* 3703.

LEELITE. See MINERALOGY, *Addenda.*

LEGEND, col. 2, l. 34, *r.* Sybaris. Col. 3, l. 36, for found *r.* fecret; l. 8 from bottom, *r.* Coningham.

LEHI, in *Geography*, add—Alfo, a townfhip containing 1188 inhabitants.

LEICESTER. At the clofe, *r.* 1811, 4609 houfes, 23,146 inhabitants.

LEICESTER, in America, l. 3, *r.* 609; l. 6, *r.* 1181.

LEICESTERSHIRE, col. 3, l. 24, *r.* 1811—150—419; add—of whom 10,801 were males, and 12,345 females; 17,027 families were employed in trade and manufactures, and 11,700 in agriculture. The number of houfes was 30,019.

LEIGH, WEST. In 1811, this townfhip contained 341 houfes, and 1960 perfons; *viz.* 927 males, and 1033 females.

LEIGHTON-BUZZARD, l. 5, *r.* 1811—408 houfes, 2114 inhabitants; of whom 187 families were employed in trade and manufacture, and 283 in agriculture.

LEITH. At the end, add—By the parliamentary return of 1811, North Leith had 1085 houfes, and 4875 inhabitants; and South Leith had 838 houfes, (if not a miftake in the number,) and 15,488 inhabitants.

LEMINGTON, or LIMINGTON, l. 2, add—containing 1774 inhabitants.

LEMINGTON-PRIORS, a parifh of Warwickfhire, in the hundred of Knightlow and Kenilworth divifion, contained, in 1811, 125 houfes, and 543 perfons; *viz.* 275 males, and 268 females. But fince that period, it has been much reforted to as a watering-place refembling Cheltenham; and the number of private houfes, baths, hotels, and public buildings, for the accommodation and amufement of its vifitors, has been very much augmented, and is every year increafing.

LEMNIAN EARTH. See PHRAGIDE.

LEMON, a townfhip of Ohio, in Butler county, having 1308 inhabitants.

LEMPSTER, l. 3, *r.* 1810 and 854.

LEMUR, col. 3, l. 17 from bottom, *r.* MACACO.

LENIOR, or LENOIRE, l. 3, *r.* 5572, of whom 2449 were flaves in 1810.

LENOX, l. *ult.* *r.* 1310.

LENS, *Cryftalline of the Eye, Chemical Properties of.* See EYE.

LEOMINSTER, col. 3, l. 19, *r.* the population of the borough and parifh, &c.; *r.* 1811—3238; l. 20, *r.* 730.

LEOMINSTER, in America, l. 5, *r.* 1584.

LEONINE, l. 12, after Leonius, add—A French monk of St. Victor, at Marfeilles, about the year 1135; l. 14, after III.—But rhymes in Latin verfes were in ufe much earlier. See Warton's Hift. of Poetry, vol. i. diff. ii. At the clofe, add—See RHYME.

LEPANTHES, in *Botany*, from λεπος, *bark*, and ανθος, *a flower*, becaufe thefe plants grow on the barks of trees.—Swartz Nov. Act. Upf. v. 6. 85. t. 5. f. 6. Ind. Occ. 1555. Schrad. Journ. v. 2. 240. t. 2. f. 3. Schrad. N. Journ. v. 1. 100.—Clafs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eff. Ch. Calyx ringent; leaves ovate, pointed. Petals linear; elongated at the bafe. Lip none. Style winged. Anther a deciduous lid.

Four Weft Indian fpecies are defcribed, fmall plants, each with a thick, folitary, roundifh *leaf*, and one or two *clufters* of minute *flowers*.

LEPIDAGATHIS, from λεπις, *a fcale*, and αγαθις, *a ball*, or *round aggregation of any kind.*—Willd. Sp. Pl. v. 3. 400. Brown Prodr. Nov. Holl. v. 1. 478.—Clafs and order, *Didynamia Angiofpermia.* Nat. Ord. *Acanthaceæ*, Br.

Eff. Ch. Calyx in five deep unequal fegments. Corolla two-lipped. Capfule feffile, of two cells, with a fixed partition. Seeds two in each cell. *Br.*

L. *criftata*, Willdenow's only fpecies, from the Eaft Indies, bears aggregate, feffile, fcaly balls of *flowers*, chiefly about the crown of the *root.* The numerous *ftems* are decumbent, eighteen or twenty inches long, leafy, fquare. *Leaves* fimple, oblong, rough-edged. Mr. Brown has corrected the character, as above, from various Chinefe and tropical fpecies, in fir J. Banks's herbarium.

LEPIDOLITE. See LEPIDOLITE, and MINERALOGY, *Addenda.*

LEPSIA. Add—It is now called Lipfo.

LERIA, l. 2, after Strabo, add—This little ifland has three harbours, and is faid to produce abundance of the wood of aloes, fo much efteemed in Turkey as a perfume; though others have doubted this fact, on account of the high price of this wood at Conftantinople. In this ifland is a monaftery, and it has a town called Lera.

LERWICK. At the clofe, *r.* 1811—1049; add—the number of houfes was 252.

LESGESTAN, one of the fmall ftates of Dagheftan, confifting of a ftupendous range of mountains, very long but narrow, and forming the whole N.E. frontier of Georgia. The Lefgi or Lefghans, who inhabit this country, are a wild and favage banditti, divided into different tribes and fpeaking a different dialect. Their houfes are fituated on the loftieft mountains, and on the moft tremendous precipices: they are connected by ftone or wooden bridges, and roads carried through rocks; and they are fupplied with water by pipes or canals cut out of the rocks. The foil is fcanty, and in order to furnifh themfelves with the means of fubfiftence, the furface is increafed to the fummits of the elevated ground by graduated terraces, the intermediate fpace being filled up with rubbifh, and covered with earth. Thefe people are the braveft, as well as the moft turbulent, of all the nations of mount Caucafus, exciting terror in their neighbours, laying wafte their cottages, and carrying away the inhabitants into fervitude. They have long preferved their liberty and independence, and rendered their country inacceffible to any foreign invaders. Moft of them are Mahometans; and the few tribes that continue in ignorance, never change the object of their veneration, which is either the fun, moon, or ftars; or indeed any thing that has made an impreffion on their minds. They hire themfelves to fight the battles of their neighbours, at the price of twelve roubles the campaign, which is to ceafe at the end of three months from the appointed day. They often take different fides, not caring againft whom they fight; and thus it often happens, that the Lefghan falls by the fword of his brother or moft intimate friend. They are lightly dreffed, after the manner of the Tartars, and armed with a gun, piftols, dagger, and fabre. Their women furpafs in fymmetry and beauty all the females of mount Caucafus, and fetch the largeft prices in the markets of Conftantinople. M'Kinneir's Perfia.

LESSERTIA, in *Botany*, named in honour of the late Mr. Stephen Deleffert, to whofe mother Rouffeau's celebrated Letters on Botany were addreffed, and who, like all his family, was no lefs endeared, to thofe who knew him, by perfonal worth than by talents.—" De Cand. Aftragal. 37."

37." Brown in Ait. Hort. Kew. v. 4. 327.—Clafs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminofæ*, Juff.

Eff. Ch. Calyx five-cleft. Standard flat. Keel obtufe. Stigma capitate. Style bearded in front. Legume membranous, without valves.

L. annua, (Colutea herbacea; Linn. Sp. Pl. 1045.), and *L. perennans*, (C. perennans; Jacq. H. Vind. v. 3. t. 3.), fee Colutea, n. 11 and 12; with *L. diffufa*, (Galega dubia; Jacq. Ic. Rar. t. 576; are the only fpecies in Hort. Kew. all natives of the Cape of Good Hope, compofing a very natural genus.

LETERT, in *Geography*, a townfhip of Gallia county, in Ohio, having 501 inhabitants.

LETTERKENNY, l. 2, *r.* 1549.

LEVER, col. 2, l. 3, *dele* (See *Plate Surgery.*)

LEVERETT, l. 4, *r.* 769.

LEWES. At the clofe, *r.* The population of the rape of Lewes was ftated, in the parliamentary return of 1811, to be 18,659 perfons, occupying 2932 houfes.

LEWIS XVI. col. 10, l. 44, *r.* the fon, Lewis XVII., died very miferably June 8th, 1795, and his fifter, Maria Therefa Charlotte, was delivered up in exchange for deputies, December 26th, 1795. The queen was brought to the fcaffold on October 16th, 1793, and Elizabeth, the king's fifter, May 12, 1794. Col. 11, l. 2, add—Lewis XVIII., on whom the crown devolved after the death of Lewis XVI. and his fon Lewis XVII., retired, during the fubfequent period of the *Revolution*, (which fee,) firft to Peterfburg, and was allowed a proceffion by the emperor of Ruffia, April 3d, 1798; he afterwards fought an afylum in this country, and landed at Yarmouth, under the title of the Count de Lille, October 6th, 1807; and being recalled to the throne of France, made his public entry into London from Hartwell, where he had refided, April 21ft, 1814; and having failed from Dover April 23d, made his entry into Paris May 3d, 1814; but quitted this city again in confequence of the landing of Buonaparte in France, March 21ft, 1815. After the battle of Waterloo, he returned to Paris, and refumed the government, July 8th, 1815.

Lewis, in *Geography*, a county of New York, containing 6433 inhabitants, of whom 4 were flaves in 1810.—Alfo, a townfhip of Ohio, in Clermont county, having 903 inhabitants.—Alfo, a county of Kentucky, containing 2357 perfons.

LEWISBURG, a town of Kentucky, in Mafon county, having 19 inhabitants.

LEWISHAM. In 1811, the parifh contained 1105 houfes, and 6625 perfons; 2923 being males, and 3702 females.

LEWISIA, in *Botany*, in memory of Meriwether Lewis, efq. late governor of Upper Louifiana, the difcoverer of feveral new American plants.—Purfh 368.—Clafs and order, *Polyandria Monogynia.* Nat. Ord......

Eff. Ch. Calyx of many membranous leaves. Petals twice as many. Style three-cleft. Capfule fuperior, of three cells. Seeds two in each cell, lenticular, polifhed.

1. L. *rediviva.* Purfh n. 1.—On the banks of Clarck's river, perennial, flowering in July. *Leaves* radical, linear, rather fucculent. *Stalk* radical, bearing one or two handfome white *flowers*, whofe *calyx* is elegantly veined with red. *Purfh.*

LEWISTOWN, l. 3, *r.* 1038; l. *penult. r.* 474.

LEXAWASCEIN, a townfhip of Wayne county, in Pennfylvania, containing 165 inhabitants.

LEXINGTON, l. 2, add—containing 6641 inhabitants, of whom 1911 were flaves in 1810; l. 19, after univerfity, add—or college, a Lancafterian fchool, and other well-regulated feminaries; l. 22, *r.* in 1810, was 4326, of whom 1509 were flaves. In 1817, it amounted to 6000, though in 1773 it was merely a hunting camp; l. 28, after Georgia, add—in Oglethorp county, having 113 inhabitants; l. 34, add—In 1810, the inhabitants were 1052.

LEYDEN, l. *ult. r.* 1009.

LEYLAND, a townfhip of Leyland hundred, in Lancafhire, which, in 1811, contained 459 houfes, and 2646 perfons; 1263 being males, and 1383 females: 97 families employed in agriculture, and 391 in trade, manufactures, and handicraft.

LIBEL, col. 4, l. 30, *dele* pillory.

LIBERTY, l. 12, *r.* 6228 inhabitants, of whom 4808 were flaves in 1810. At the clofe—Alfo, a townfhip of Butler county, in Ohio, containing 1790 inhabitants.—Alfo, a townfhip of Ohio, in Delaware county, containing 206 inhabitants.—Alfo, a townfhip of Highland county, in Ohio, having 1120 inhabitants.—Alfo, a townfhip of Ohio, in Trumbull county, having 473 inhabitants.

LICHEN Islandicus, *Chemical Compofition of.* This has been fubmitted to a rigorous and curious analyfis by Berzelius. Our limits will not permit us to enter into the details, but the following are the refults:

Syrup	3.6
Bitartrate of potafh, with fome tartrate of lime and phofphate of lime	1.9
Bitter principle	3.0
Green wax	1.6
Gum	3.7
Extractive colouring matter	7.0
Starch	44.6
Starchy infoluble matter	36.6
	102.0

We prefume in the above analyfis the excefs of weight (if not an error) was owing to water.

This indefatigable chemift afterwards examined other fpecies of *lichens*, fuch as the *L. barbatus*, *L. faftigatus*, and the *L. fraxineus.* He found them all characterifed by the prefence of a fpecies of ftarch which poffeffes feveral peculiar properties.

LICHFIELD, l. 4, *r.* 1811—1010 houfes, 5022 inhabitants, 509 families employed, &c.

LICK, a townfhip of Ohio, in Rofs county, having 334 inhabitants.

LICKING. Add—Alfo, a county of Ohio, containing 7 townfhips, and 3852 inhabitants.—Alfo, a townfhip of the faid county, having 632 inhabitants.—Alfo, a townfhip of Ohio, in Mufkingum county, containing 796 inhabitants.

LIEOU-KIEOU, or Loo-choo, or *Great Loo-Choo*, l. 2, after number, add—or rather innumerable. At the clofe, add—The beft maps are wrong in the fituation of Loo-choo. They place its town between 25° 45′ and 27° 53′ N. lat. and between 128°,5 and 129° E. long. The ifland is alfo made to extend about 130 miles from N. to S. with an uniform breadth of about 30 miles. Its true direction is nearly N.E. by N. and S.W. by S.; its length is only 56 miles, and its breadth about 11. The longitude of the weftern extremity is 120° 34′ E., and of its eaftern 128° 19′. The latitude of the S. point is 26° 4½′ N. and of the N. point 26° 52½′. See an interefting account of thefe iflands in Capt. Hall's Voyage to Loo-choo, or Edinburgh Rev. N° 58. p. 460, &c.

LIME,

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LIME, in *Chemiſtry*. Lime, according to the recent determination of Dr. Thomſon, is a compound of 100 calcium + 38.09 oxygen: hence the weight of the atom of calcium will be 26.25, and of lime 36.25. We expect that the weight of the atom of lime will be hereafter proved to be 37.5 See Atomic *Theory*.

The ſalt of lime, commonly known by the name of *oxymuriate of lime*, and employed for bleaching, has been recently demonſtrated by Dr. Thomſon to be a real *chloride of lime*, and not a *chloride of calcium*; that is to ſay, it is a compound of *chlorine* and *lime*. (See Bleaching, Chlorine, and Oxymuriatic *Acid*.) Dr. Thomſon has alſo rendered it probable, that barytes, ſtrontian, potaſh, and ſoda, as well as many of the metallic oxyds, likewiſe unite with chlorine, and form *chlorides* of theſe reſpective baſes.

LIMERICK, in America, l. 4, *r.* 1177; l. 5, *r.* 1282.

LIMINGTON. Add—with 1774 inhabitants.

LINCOLN, col. 6, l. 4 and 3 from bottom, *r.* 1811—1813—8861.

Lincoln, in America, l. 16, after Warren, add—The number of inhabitants, in 1810, was 42,992; l. 22, *r.* 16,359—2489. Col. 2, l. 3, *r.* 4555; l. 4, 2212; l. 5, *r.* 8676—2341; l. 11, *r.* 109; l. 13, *r.* 221; l. 15, *r.* 713. Add—Alſo, a county of Weſt Tenneſſee, containing 6104 inhabitants, of whom 720 are ſlaves.

LINCOLNSHIRE, l. 8, *r.* 1811—46,368—237,891; l. 9, *r.* 117,022 males, 120,869 females, 13,184 families; l. 11, *r.* 29,881.

LINCOLNTOWN. Add—Alſo, a town of Georgia, in Lincoln county.

LINCOLNVILLE. Add—It contains 1013 inhabitants.

LINE, in *Fortification*. Add—See Field-*Fortification*.

LINGA, col. 2, l. 2, for fire *r.* fine.

LINLITHGOW, l. *ult.* *r.* 1811—4022—535; the country part having 229 houſes, and 1465 perſons; and the town part having 306 houſes, and 2557 perſons.

LINLITHGOWSHIRE, col. 2, l. 15, *r.* 1811—19,451, occupying 3098 houſes: the number of males is 8874, and that of females 10,577; of theſe 1506 families are employed in trade and manufactures, and 1132 in agriculture. Col. 4, l. 18, after town, add—The number of houſes in the pariſh is 352, and of perſons 2704.

LINNÆUS, col. 5, l. 24, *r.* journal. Col. 8, l. 19, *r.* Caper. Col. 11, l. 12, *r.* Oeland. Col. 15, l. 7, *r.* Hammaſley.

LINOZOSTIS. Add—See Mercurialis.

LIQUIDS, *Expanſion of*. See Expansion and Heat.

LISBON, in America, l. 3, *r.* 1128. Add—Alſo, a town of Maine, in the county of Lincoln, having 1614 inhabitants.

LISKEARD, l. 32, *r.* in the year 1811, the borough and pariſh were returned to parliament as containing 523 houſes, and 2884 perſons; the borough having 361 houſes, and 1975 perſons.

LISMORE. At the cloſe, add—By the returns of 1811, the pariſh of Liſmore, in the diſtrict of Lorn, contains 252 houſes, and 1323 perſons.

LISTERA, in *Botany*, dedicated by Mr. Brown to the memory of the famous Engliſh conchologiſt, Dr. Martin Liſter, who wrote ſeveral papers on vegetable phyſiology, in the Philoſophical Tranſactions.—Brown in Ait. Hort. Kew. v. 5. 201. Sm. Compend. 130.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals ſpreading. Lip without a ſpur, cloven, not embraced by the calyx. Column without wings. Anther parallel to the ſtigma.

L. ovata, and *L. cordata*; ſee Epipactis, n. 10 and 11.

LITCHFIELD, l. 2, *r.* 1847; l. 6, *r.* 1810—382; l. 9, *r.* 22; l. 10, *r.* 41,375; l. 20, *r.* 4639.

LITHION, Lithia, or rather Lithina, in *Chemiſtry*, the name of a fixed alkali recently diſcovered in Sweden, and ſo called from λίθος, *a ſtone*, becauſe obtained only from mineral ſubſtances. This alkali was firſt detected by Mr. Arvedſon, a young Swediſh chemiſt, and pupil of Berzelius. He obtained it from a mineral found at Uten, in Sweden, and which had been ſome time before deſcribed, and named *petalite* (ſee Petalite) by M. D'Andrada. He found it likewiſe ſoon after in *triphane* (or *ſpodumene*) and in cryſtallized *lepidolite*, all minerals from the ſame place.

Lithina is principally diſtinguiſhed from the other alkalies by its great capacity for ſaturating acids. Sir H. Davy has ſucceeded in reducing it to the metallic ſtate. *Lithinum*, as this metallic baſe may be called, bears a ſtrong reſemblance to the other alkaline metals, eſpecially to ſodium, to which it ſeems moſt nearly allied.

With reſpect to the ſalts of lithina, they have not yet been rigorouſly examined. The *ſulphate* cryſtallizes with ſufficient facility, and the cryſtals contain no water of cryſtallization. Their ſolution is not precipitated by the muriate of platinum, nor by the tartaric acid. The *muriate* deliqueſces like the muriate of lime, and melts below a red heat. The *nitrate* cryſtallizes in rhomboids, but readily attracts moiſture. The *carbonate* cryſtallizes in priſms, and the cryſtals which are commonly very minute are not very ſoluble in water. The *ſulphuret* of lithina is very ſoluble, and of a yellow colour.

According to Vauquelin, 100 parts of lithina contain 43.5 of oxygen: hence the weight of the atom of lithinum will be very nearly 13, and of lithina 23, from which data the compoſition of all its ſalts can be eaſily aſcertained.

LITHOMARGE. See Mineralogy, *Addenda*.

LITHONTRIPTICS. See Lithotomy, and Urinary *Calculi*.

LITTLE Britain, l. 14, *r.* 1700.

Little *Beaver*, a townſhip of Beaver county, in Pennſylvania, having 1379 inhabitants.

Little *Compton*, l. 2, *r.* 1553.

Little *Creek*, l. 2, *r.* 2039; l. 3, *r.* 3840.

LITTLESTOWN, a townſhip in Adams' county, in Pennſylvania, having 287 inhabitants.

LITTLETON, l. 3, *r.* 773; l. 5, *r.* 873.

LIVERMORE, l. 2, *r.* Oxford for Cumberland; l. 4, *r.* 1560.

LIVERPOOL, l. 6, *r.* 1811—94,376—15,589.

LIVINGSTON, l. 4, *r.* 3575—685.

LLANBADARN Vawr, col. 2, l. 17, excluſive of Aberyſtwith; l. 18, *r.* 1811—525—2998. Aberyſtwith contains 477 houſes, and 2264 perſons.

LLANBEDER, l. 2, *r.* Moyddyn; l. 10, for Tueſday *r.* Saturday; and add—it has nine fairs in the year; l. 21, *r.* 1811—128; l. 22, *r.* 692.

LLANDAFF, near the cloſe, *r.* 1811—199 houſes, and 963 inhabitants.

LLANDEILO Vawr, l. 2, inſert—Cayo, and *r.* Perfedd. Col. 2, l. 46, *r.* The inhabitants of Llandeilo, excluſive of the hamlet of Llandeilo-villa in the hundred of Perfedd, which contains 184 houſes, and 776 inhabitants, according to the parliamentary returns of 1811, are eſtimated at 1103, and the houſes at 222.

LLANDOVERY, l. 6. By the returns of 1811, the townſhip

township contained 266 houses, and 1442 inhabitants. Col. 2, l. 5, for Friday *r.* Saturday. Add—It has six fairs in the year.

LLANDRINDOD. Add—In 1811, the parish was returned as containing 32 houses, and 171 inhabitants.

LLAN-ELLY, l. 3, *r.* 1811; l. 4, *r.* 862, and 3891; l. 16, add—This is one of the most thriving places in South Wales. It abounds with excellent coals and iron-ore, extensive iron-works, and also lead and copper works.

LLAN-GADOG Vawr, l. *ult.* *r.* 1811—1964; and add—378 houses.

LLANGOLLEN, l. 4, *r.* 1811; l. 5, add—those of the parish, comprehending three townships, amounted to 612, and the inhabitants to 2897.

LLANNERCH Y MEDD, l. 3, add—the parish of Amlwch contains, by the returns of 1811, 920 houses, and 4210 inhabitants.

LLAN RHAIADAR, col. 2, l. 6 and 7, *r.* 1811—1974; add—414 houses.

LLANRWST, near the close, *r.* 1811—2502, and 452 houses.

LLANSTEPHAN, col. 2, l. *ult.* *r.* 1811—997—221.

LLANTRISSENT, l. *ult.* *r.* 1811—246—2122.

LLANVYLLING, or Llanfyllin, l. *ult.* *r.* 1811; the parish of Llanvylling contained 291 houses, and 1508 inhabitants.

LLANYDLOES. Add—By the return of 1811, the parish contained 470 houses, and 2386 inhabitants.

LLAUGHARNE, l. *ult.* *r.* 1561; and add—the number of houses was 283.

LOCHE. See Cobitis.

LOCKERBIE. In 1811, the whole parish of Drysdale contained 369 houses, and 1893 persons; 904 being males, and 992 females.

LOGAN, l. 2, *r.* 11,591, including 2285 slaves in 1810.

LOGWOOD, *Chemical Properties of.* See Hematin.

LONCHURUS for Lonchiurus.

LONDON, in *Geography*, a town of Rockingham county, in New Hampshire, having 1492 inhabitants.

London *Britain*, a township of Chester county, in Pennsylvania, having 404 inhabitants.

LONDONDERRY, in America, l. 5, *r.* 2766; l. 16, add—containing, in 1810, 637 inhabitants.—Also, three townships in Pennsylvania, one in Dauphin county, having 2411 inhabitants; *dele* the rest of the article, and add—the second in Chester county, having 1164 inhabitants; and another in Bedford county, having 486 inhabitants.

LONDONGROVE, l. 2, *r.* 983.

LONG Meadow, l. *ult.* *r.* 1036.

Long *Sweep*, a township of Mercer county, in Pennsylvania, having 998 inhabitants.

LONGTOWN. In 1811 this township contained 173 houses, and 1579 persons; *viz.* 744 males, and 835 females: 169 families being employed in agriculture, and 147 in trade, manufactures, and handicraft.

Longtown, a township of Ewaslacy hundred, in the parish of Clodock, and county of Hereford, which, by the returns of 1811, contained 164 houses, and 844 persons; *viz.* 423 males, and 421 females: 124 families being employed in agriculture, and 40 in trade, &c.

LOO-CHOO. See Lieou-Kieou.

LOOE, East, l. 14, *r.* 1811—128—608.

Looe, *West*, l. 13 and 14, *r.* 1811—92—433.

LOSTWITHIEL, col. 2, l. 17 and 18, *r.* 1811; for town *r.* borough and parish—132 houses, 825 inhabitants.

LOTTERLOCH, a town of Orleans county, in Vermont, having 101 inhabitants.

LOUDON, l. 3 and 4, *r.* containing 21,338 inhabitants, of whom 5157 are slaves.

LOVELL, l. 1, for York *r.* Oxford, add—containing 365 inhabitants.

LOUGHBOROUGH. In 1811 this parish contained 1128 houses, and 5400 persons; *viz.* 2612 males, and 2788 females: 186 families being employed in agriculture, and 847 in trade, manufactures, or handicraft.

LOUGHOR, a borough of Wales, in the county of Glamorgan and hundred of Swansea, which in 1811 contained 112 houses, and 473 inhabitants.

LOUIS, St., l. 23, add—St. Louis forms a district of Louisiana, and in 1810 contained 5647 inhabitants, of whom 740 were slaves.

LOUISA, in Virginia, l. 3 and 4, insert—11,900 inhabitants, of whom 6430 were slaves.

LOUISIANA. At the close, add—According to the census of 1810, Louisiana comprehends the districts of St. Charles, of St. Louis, of St. Genevieve, of Cape Girardeau, of New Madrid, and also the settlements of Hope Field and St. Francis, and also settlements on the Arkansas; and the number of inhabitants is stated at 20,845, of whom 3011 are slaves. See United States.

LOUREIRA, in *Botany*, in memory of the venerable Father John de Loureiro, author of the *Flora Cochinchinensis*, who died about the year 1797, at Lisbon.—Cavan. Ic. v. 5. 17. Willd. Sp. Pl. v. 4. 866. Ait. Hort. Kew. v. 5. 418.—Class and order, *Dioecia Monadelphia.* Nat. Ord. *Tricoccæ*, Linn. *Euphorbiæ*, Juss.

Eff. Ch. Male, Calyx in five deep segments. Corolla bell-shaped, five-cleft. Stamens 8—13, connected at the base.

Female, Cal. and Cor. like the male. Capsule superior, two-lobed, two-celled. Seeds solitary.

1. L. *cuneifolia.* Cav. t. 429. Willd. n. 1.—Leaves obovate-lanceolate, partly three-lobed.—Native of Mexico. A *shrub*, with stalked aggregate *leaves*, and pale red *flowers*, from lateral buds.

2. L. *glandulosa.* Cav. t. 430. Ait. n. 1.—Leaves heart-shaped, fringed with glands. From the same country. *Stem* shrubby, forked, with forked axillary *panicles* of male *flowers;* the stalks of the female ones simple.

LOUTH, col. 3, l. 1, *r.* 1811; l. 3, *r.* 4728—976.

LOWER *Alloway's Creek.* Add—It contains 1184 inhabitants.

Lower *Chanceford*, a township of York county, in Pennsylvania, having 818 inhabitants.

Lower *Dublin*, l. 2, *r.* 2194.

Lower *Township*, a township of Capeway county, in New Jersey, having 862 inhabitants.

Lower *Penn's Neck.* Add—containing 1163 inhabitants.

Lower *Merion*, a township of Montgomery county, in Pennsylvania, having 1835 inhabitants.

Lower, for other articles under the denomination of, see Mahontogo, Mohaus, Mount Bethel, Nazareth, Chichester, Darby, Providence, Oxford, Salford, Smithfield, and Wakefield.

LOWHILL, l. 2, *r.* 632.

LOYALSOCK, a township of Lycoming county, in Pennsylvania, having 850 inhabitants.

LUÇON, col. 3, l. 5, *r.* Columba; l. 12, ditto.

LUDGERSHALL, l. 3, 1811—this borough and parish—114—487.

LUDLOW, l. 29 and 30, *r.* 1811—851—4150.

Ludlow, in America, l. 3, *r.* 730; l. 4, *r.* 877.

LULWORTH, East, l. 4, *r.* 81—382.

LUNENBURG,

LUNENBURG, in Virginia, l. 3, *r.* 12,261 inhabitants, of whom 7155 were flaves in 1810; l. 6, *r.* 744. Do. *r.* 1371.

LURGAN, l. 2, *r.* 874.

LUTON. In 1811 the parifh contained 726 houfes, and 3716 perfons; *viz.* 1695 males, and 2021 females: 418 families being employed in agriculture, and 219 in trade and manufactures.

LUTTERWORTH, l. 16 from the bottom, *r.* 1811—410—1845.

LUZERNE, l. 5, *r.* 29; l. 8, *r.* 18,109; add—Alfo, a townfhip of Fayette county, in Pennfylvania, having 1538 inhabitants

LYCOMING, l. 5 and 6, *r.* 18—11,006; add—Alfo, a townfhip in the faid county, having 795 inhabitants.

LYCOPERDON. Add—See TULOSTOMA.

LYMAN, l. 5, *r.* 948; l. 7, add—with 1248 inhabitants.

LYME, l. 1, *r.* containing 670 inhabitants; l. 6, *r.* 4321.

LYME-*Regis*, col. 2, l. 8 and 7 from the bottom, *r.* 1811—1925—342.

LYMINGTON, l. 18 and 17 from the bottom, *r.* 1811—2641—534.

LYNDEBOROUGH, l. 4, *r.* 1074.

LYNDHURST, l. 24 and 25, *r.* 1811—192—1015.

LYNDON, l. *ult.* *r.* 1090.

LYNN, l. 5, *r.* 4087; add—Alfo, a townfhip of Northampton county, in Pennfylvania, having 1497 inhabitants.

LYNN-*Field*, l. *ult.* *r.* 509

LYNN-*Regis*, l. *ult.* *r.* 1811—2199—10,259.

LYONS, l. 38, after branches, add—The prefent manufactures of Lyons confift chiefly of cloths, of gold, filver, and filk, galloons, ribbons, and lace, and the produce of furriers, hatters, and bookfellers, befides thofe of the working of gold-thread, filk-weavers, dyers, &c. Col. 2, l. 26, add—fome reckon the whole population at 150,000.

LYTHIODES. See MINERALOGY, *Addenda*

M.

MACCLESFIELD, l. 6 from bottom, *r.* 1811—2518—12,299; of whom 2458 families were employed, &c.; l. 3 from the bottom, for that period *r.* the return in 1800.

MACHIAS, l. 14, *r.* 1810—1570.

VOL. XXII.

MAC-INTOSH, in *Geography*, a county of Georgia, which, with its town Darien, contains 3739 perfons, including in the county 2850, and in the town 107 flaves.

MACKEAN, a county of Pennfylvania, containing Ceres townfhip, and 142 inhabitants.

MACPHERSON, col. 2, l. 29, for Lairy *r.* Laing.

MACROMETER, an inftrument invented by Dr. Wollafton, for meafuring directly the diftance of inacceffible objects, by means of two reflectors, mounted as in a common fextant, but at a greater diftance from each other.

MACROPODIUM, in *Botany*, from the *long foot*, or ftalk, of its feed-veffel.—Brown in Ait. Hort. Kew. v. 4. 108.—Clafs and order, *Tetradynamia Siliquofa.* Nat. Ord. *Siliquofe*, Linn. *Cruciferæ*, Juff.

Eff. Ch. Pod linear, ftalked. Cotyledons accumbent. Calyx erect.

1. M. *nivale.* Siberian Macropodium. Ait. n. 1. (Cardamine nivalis; "Pallas It. v. 2. Append. n. 113. t. U. Willd. Sp. Pl. v. 3. 482.)—Native of Siberia, from whence it was procured for Kew garden, in 1796, by fir J. Banks. A hardy perennial, flowering in fummer. *Herb* fmooth, pale green, with oblong, toothed *leaves;* the radical ones ftalked. *Flowers* fmall, white. *Pods* reflexed. *Willd.*

MACUACO, FLYING, of Pennant, in *Zoology*, the Lemur volans of Linnæus; for an account of which, fee GALEOPITHECUS *volans.*

MACUNGY, l. 2, *r.* 2420.

MADBURY, l. 4, *r.* 684.

MADDERING, an operation performed in *Calico-*PRINTING; which fee.

MADDOX, l. 32, *dele* to that of St. Afaph; and for and from thence to *r.* that of Worcefter.

MADELEY, l. 9.—In 1811, the parifh contained 1026 houfes, and 5076 perfons; *viz.* 2502 males, and 2574 females: 18 families being employed in agriculture, and 747 in trade, manufactures, or handicraft.

MADISON, l. 4, *r.* 8381 inhabitants, of whom 3970 were flaves in 1810; l. 7, *r.* 11,587—3000. At the end, add—Alfo, a townfhip of Maine, in Somerfet county, having 686 inhabitants.—Alfo, a county of New York, containing 25,144 inhabitants, of whom 35 were flaves in 1810.—Alfo, a townfhip of Ohio, in Guernfey county, having 249 inhabitants.—Another in Highland county, with 430 perfons.—Another in Knox county, with 138 perfons.—Alfo, a county of Ohio, containing fix townfhips, and 1603 inhabitants.—Alfo, a townfhip of Montgomery county, with 426 perfons.—Another of Mufkingum county, with 426 perfons.—Another of Pickaway county, with 406 perfons.—Another of Butler county, with 1228 perfons.—Another of Columbiana county, with 539 perfons.—Another of Gallia county, having 170 inhabitants.—Another of Scioto county, with 307 perfons.—Alfo, a town of Georgia, in Morgan county, having 124 inhabitants.—Alfo, a county of the Miffiffippi territory, having 4699 inhabitants, of whom 948 were flaves in 1810.—Alfo, a townfhip of Clarke county, in the Indiana territory.

MADRID, in America. At the clofe, add—The diftrict, by the cenfus of 1810, contains 2103 inhabitants, of whom 287 were flaves.

MAD-RIVER, a townfhip of Champaign county, in Ohio, having 1008 inhabitants.

MAGIC, SUPERSTITIOUS, infert—has been fuppofed to confift; in l. 2, infert after its—fuppofed; l. 7, *dele* half.

MAGIC SQUARE, col. 5, l. 18 from bottom, *dele* and.

MAGNESIA, in *Chemiftry*. According to the lateft determinations, the weight of the atom of magnefia is 25, that of oxygen being 10; from this, the compofition of its falts can be eafily afcertained. See ATOMIC *Theory*.

Separation of Magnefia from Lime.—We may take the opportunity of mentioning here an ingenious method of effecting this difficult chemical problem lately propofed by Mr. R. Phillips, and originally fuggefted, we believe, by Mr. T. Cooper. The two earths are to be reduced to the ftate of fulphate, and then well wafhed with a faturated folution of fulphate of lime, which readily diffolves, and thus feparates the fulphate of magnefia, but which, from its being already faturated, can take up no more fulphate of lime.

MAGNESIAN LIME-STONE. See MINERALOGY, *Addenda*.

MAGNESITE. See MINERALOGY, *Addenda*.

MAGNESIUM, in *Chemiftry*, the metallic bafis of magnefia. See MAGNESIA.

MAGNOTS. At the end, add—See MAINA.

MAHBNING, a townfhip of Northumberland county, in Pennfylvania, with 829 inhabitants.

MAHIM, for 17 miles N. of Bombay *r.* 7 miles N. of Bombay fort.

MAHONING. Add—In Indiana county, having 552 inhabitants.—Alfo, a townfhip of Mercer county, in the fame ftate, having 1316 inhabitants.

MAHONTOGO, *Lower* and *Upper*, two townfhips of Berks county, in Pennfylvania; the former having 637, and the latter 489 perfons.—Alfo, a townfhip of Northumberland county, having 1608 inhabitants.

MAID, or MAIDEN. See VIRGIN.

MAID, in *Ichthyology*. See SKATE.

MAIDEN CREEK, in *Geography*, a townfhip of Berks county, in Pennfylvania, having 918 inhabitants.

MAIDENHEAD, col. 2, l. 8, *r.* 1811—792—161.

MAIDENHEAD, in America, l. 4, *r.* 1810—1086.

MAIDSTONE, col. 3, l. 21, &c. *r.* 1811—9443; *viz.* 4412 males, and 5031 females: of whom 942 families are employed in trade and manufactures, and 437 in agriculture. The number of houfes is 1706.

MAIDSTONE, in America, l. 2, *r.* 177.

MAINA, a diftrict of the Morea, including that part of the country anciently called Laconia, that lies between the gulf of Meffene and Gythium, bounded on the N. by the higheft range of Taygetus, from which a chain of rugged mountains defcends to Cape Matapan, the fouthern termination of the country. It is watered by Pamifus, now the Pirnetza, the broadeft river of the Peloponnefus. The plains round Calamata, a town towards the N.W., are fertile and well cultivated, abounding with the cactus, a prickly pear, the white mulberry affording food for great numbers of filk-worms, and various fruit-trees. The town is built on a plan that is well adapted for defending the inhabitants againft the attacks of the pirates that infeft the coaft. The government of the Maina, in 1795, refembled that of the Scottifh iflands in former time. Over each diftrict prefided a capitane, whofe refidence was a fortified tower. Each chief, befides his own domain, received a tithe from the produce of the land of his retainers; and the different chiefs were independent of each other. Becaufe the Mainots were reluctant to fubmit to the charatch, or poll-tax, they had been repeatedly attacked by the Turks, but without fuccefs; when an enemy appeared, the coaft was immediately deferted, and the inhabitants retired to the ftrong holds of Taygetus. Expert alfo in the ufe of the rifle, befides the advantages of their fituation, they have been able to defy the Turkifh forces. Some of the chiefs were found by Mr. Morritt to be tolerably verfed in Roman literature, and fome capable of reading Herodotus and Xenophon. The laws of hofpitality were obferved amongft them with the ftricteft punctilioufnefs, and letters of recommendation fecured to travellers a friendly reception. The religion of the Mainots is that of the Greek church, with all its mummery. Their women were never fecluded nor enflaved, and therefore neither corrupted nor ignorant. They diftinguifhed themfelves by attention to domeftic management, and the education of their children. Inftances of conjugal infidelity were rare. In cafe of neceffity, it is faid that the Mainots can bring 12,000 men into the field. See Walpole's Memoirs on Turkey, &c. 1817.

MAINE, at the clofe, add—See UNITED STATES.

MAINOTS. See MAINA.

MAKEFIELD *dele:* add—See WAKEFIELD.

MAKONGO, one of the ftates of Loango in Africa, of which Malemba is the port. The king of Makongo, or Malemba, refides inland at a town called Chingalé, the Kinkalé of the charts.

MALABAR, l. 11, add—The Malabar language prevails on the weftern coaft of Cape Comorin, extending over Travancore and Malabar, formerly named Kêrala, as far N. as Nilifuran. See TOOLAVA.

MALCOMIA, in *Botany*, named in honour of Mr. William Malcolm, a celebrated cultivator, to whom the Englifh gardens are much indebted.—Brown in Ait. Hort. Kew. v. 4. 121.—Clafs and order, *Tetradynamia Siliquofa*. Nat. Ord. *Siliquofæ*, Linn. *Cruciferæ*, Juff.

Eff. Ch. Pod nearly cylindrical, of two valves. Stigma fimple, acute. Cotyledons incumbent, flat. Calyx clofed.

This appears to us a very natural and well-defined genus, though hitherto confounded with *Cheiranthus*. The three fpecies in Hort. Kew. are,

1. M. *maritima*. See CHEIRANTHUS, n. 14; a pretty annual, frequently and eafily cultivated.

2. M. *africana*. (Hefperis africana; Willd. Sp. Pl. v. 3. 532. Leucojum gallicum, folio halimi; Bocc. Sic. 77. t. 42. f. 1.)

3. M. *littorea*. See CHEIRANTHUS, n. 21. (Leucojum marinum minus; Cluf. Hift. v. 1. 298. f. 2.)

MALDEN, col. 2, l. 12, *r.* 1811; l. 13, *r.* 505—2659.

MALDEN, l. 4, *r.* 1384.

MALEMBO, or MALEMBA. Add—See MAKONGO.

MALIC ACID, in *Chemiftry*. See SORBIC *Acid*.

MALKOHA. See PHŒNICOPHÆUS.

MALLENDERS, a cutaneous difeafe, commonly confined to draught-horfes: it is an inflammation of the fkin below the hock, producing cracks which difcharge a fœtid matter. For the cure of this diforder, owing to want of cleanlinefs and friction, the hair fhould be clipped, and the parts well wafhed with foft-foap and water; and Mr. White recommends the following ointment: *viz.* a compofition of 2 oz. of wax ointment, 1 oz. of olive-oil, oil of turpentine and camphor, of each 1 dr., and 2 drs. of acetated water of litharge. Mr. Ryding recommends a mixture of 1 oz. of ftrong quickfilver ointment, and 10 grs. of muriated quickfilver ſilver in fine powder. When this diſeaſe occurs above the knee, it is called *ſallanders.*

MALLING, West, l. 6 and 7 from the bottom, *r.* 1811—1154—223. Add—In 1811, the number of houſes in Eaſt Malling was 217, and of inhabitants 1256.

MALMESBURY, col. 2, l. 34, *r.* 1811; l. 35, 237—1152.

MALPAS. In 1811, the townſhip contained 193 houſes, and 938 perſons; *viz.* 478 males, and 460 females.

MALTA, a town of the diſtrict of Maine, in the county of Kennebeck, having 468 inhabitants.

MALVERN, Great, l. 22 from the bottom, *r.* 1811—1205 inhabitants, occupying 204 houſes.

MAMAT, St. *r. St.* Mamot.

MAMMALIA. *Dele* the account of the plates.

MAMMOTH, or Mammont, in *Natural Hiſtory.* The name of mammoth has been given to two very different animals, whoſe remains are found in a foſſil ſtate; the firſt, which has been for ages called ſo by the Ruſſians and Siberians, occurs abundantly on the north part of the ancient continent. It is a ſpecies of elephant, the ivory of which is ſo well preſerved as to become an article of commerce. This animal, according to the reſearches of Cuvier, is a different ſpecies of elephant from that of India or Africa, reſembling the former the moſt. The American mammoth, as it has been called, belongs not only to a ſpecies diſtinct from the European mammoth, but from the Indian or African elephant, and from the form of its teeth muſt be even claſſed as a diſtinct genus; he has given it the name of maſtodon. See Mastodon, *Addenda.*

Of the Ruſſian maſtodon very erroneous accounts have been publiſhed, particularly reſpecting its ſize. An animal of this kind having been diſcovered preſerved entire in the ice, by a Tunguſſian fiſherman in Siberia, was afterwards deſcribed by Mr. Adams; but, according to Cuvier, the great ſize attributed to it by that gentleman does not accord with the actual admeaſurement of the bones, the head weighing, according to this account, four hundred pounds, which brings it nearly to the known ſize of the foſſil elephant. The moſt remarkable fact ſtated by Mr. Adams is, that the animal was covered with two kinds of hair; the one red, which was both of a finer and coarſer ſort; the other was long, black, and briſtly. This hair was very abundant. The fact proves two things of importance in the natural hiſtory of the mammoth, namely, that it was a different ſpecies from living elephants, and that it was ſufficiently covered to enable it to live in cold climates. It is a commonly received tradition in Siberia, that theſe animals are frequently found entire in the ground, from whence the name of mammoth is derived, which ſignifies an animal that lives in the earth. According to Cuvier, theſe facts prove that the foſſil elephant periſhed by a ſudden revolution of the globe that deſtroyed the whole ſpecies, and which froze the individuals that were then in the northern regions: nor can any reaſon be advanced why theſe remains ſhould not continue preſerved in the eternal ice of thoſe countries, till diſcovered by accident, or the hands of man. Thoſe which were overtaken and buried in more ſouthern climates are more decompoſed, and their bones have become more or leſs friable; but this decompoſition is the only change which they have undergone; they are neither broken nor rolled, and it may be clearly perceived that they periſhed where their bones are now found. Many bones of the ſame ſpecies of mammoth, or foſſil elephant, have been diſcovered in different parts of England. We have ſeen a tooth, one of the molares of theſe animals, found near Whitby in Yorkſhire, which meaſured ſeventeen inches round.

The greateſt number of the teeth of the mammoth that have been examined reſemble at firſt ſight thoſe of the Indian elephant; but, according to Cuvier, the ſtructure, on more attentive obſervation, will be found ſomewhat different. In the living ſpecies of elephants, the ſize of the tuſks varies with the ſpecies, the ſex, and the varieties; and as they continue to grow during the life of the animal, age determines their dimenſions more than any other cauſe. The tuſks of the African elephant are larger than thoſe of the Indian; they are harder, and preſerve their whiteneſs better. According to Pennant, Moſambique furniſhes tuſks of living elephants ten feet in length, which are the largeſt that are known. The degree of curvature in the tuſks differs as much as the ſize; ſome occaſionally occur in a ſpiral form, and ſome in that of the letter S. We are unacquainted with the differences that might exiſt in the curvature of the tuſks of the mammoth occaſioned by difference of ſex or other cauſes. Many of the tuſks have the common degree of curvature, but others have much more curvature than occurs in any living elephants, approaching to a ſemicircle or half an ellipſe divided through its tranſverſe axis. Some tuſks of the mammoth are formed ſpiral, like what ſometimes occur among living elephants. The height of the mammoth did not greatly exceed that which the Indian elephants can attain. It is however certain from its remains, that the mammoth differed as much from the Indian elephant as the aſs differs from the horſe.

The bones of the mammoth, or foſſil elephant, are generally found in alluvial ſoil, near the ſurface of the ground. They are ſeldom iſolated, but generally mixed with bones of other quadrupeds of known genera; as the rhinoceros, the ox, the horſe, and the antelope; and are often accompanied with the remains of marine animals, ſuch as ſhells, parts of which are attached to the bones. Cuvier ſtates that he has in his poſſeſſion a jaw-bone covered with millepores and oyſters.

The beds which cover the bones of the foſſil elephant have ſeldom any great depth, and are ſcarcely ever compoſed of ſtone. They are rarely petrified, and only one or two inſtances are quoted where they were incruſted with a ſhelly ſtone. Often they are only accompanied with freſh-water ſhells. Every thing appears, ſays Cuvier, to announce that the cauſe by which they were buried is one of the moſt recent that has contributed to change the ſurface of the globe. It was neverthelefs a cauſe general in its operation, for theſe foſſil bones of elephants are too numerous, and occur in countries too remote and uninhabited to allow us to ſuppoſe that they have ever been brought there by man.

The beds which contain and cover theſe remains ſhew, that the cauſe by which the animals were deſtroyed was water, and in many inſtances the waters were the ſame as thoſe of the preſent day, ſince they contained the ſame ſpecies of ſhell-fiſh. Theſe bones are not waterworn, and therefore have not been tranſplanted from a diſtance.

The ſhells and millepores which adhere to them prove that they remained ſome time covered only with water. The different ſpecies of maſtodon, the gigantic tapir, and the foſſil rhinoceros, lived in the ſame countries as the foſſil elephant, ſince their bones are found in the ſame beds and preſerved in the ſame ſtate. Every thing therefore leads us to conclude that the mammoth, or foſſil elephant, is an extinct ſpecies, though it differs leſs from exiſting ſpecies than the other remains of quadrupeds that are found in the ſame ſituations. In a former part of this work, under the article Megatherium, the diſcovery of the foſſil elephant deſcribed by Mr. Adams is more particularly given; but the animal is erroneouſly ſuppoſed to belong to another fpecies than the elephant, and the tufks are called horns. (See Mastodon, Megalonix, and Megatherium, *Addenda.*) According to Pallas, there is fcarcely a river from the Don or the Tanais to Tchutfkoinofs in the banks of which the bones of the mammoth are not abundant, and two iflands of great fize near the mouth of the Indigerfka feem entirely compofed of thefe bones mingled with ice, fand, and the bones of the elk, rhinoceros, and other large quadrupeds.

Similar bones are found in Poland, Germany, France, Holland, and Hungary. We have before mentioned that they are found in various parts of England, and no where more abundantly than in the vale of Thames, particularly near Brentford. The teeth and bones have been generally found in alluvial foil over the chalk formation; but in Mr. Bakewell's Introduction to Geology, an inftance is given of an entire fkeleton having been found in a cavern in the mountain lime-ftone near Wirkfworth, in Derbyfhire, in 1663. Its fkull was fo large that it is ftated to have held four bufhels of corn.

MANCHA, La, l. 1 and 2, *r.* bounded on the N. by New Caftile; *dele* north of.

MANCHESTER, l. 10, add—In 1811, the number of houfes in Manchefter and Salford was 16,353, and that of the inhabitants 98,573; 44,332 being males, and 54,241 females: of whom 19,639 families were employed in trade and manufactures, and 47 in agriculture:—l. 15, *r.* the whole population of which, including Manchefter, was 138,349.

Manchester, in America, l. 4, *r.* 1137; l. 7, *r.* 1502; l. 9, *r.* 1579; l. 10, *r.* 978; add—Alfo, a town of Hillfborough, in New Hampfhire, containing 615 inhabitants.

MANEGE, or Menage, denotes an academy, riding-fchool, or other place for learning to ride, and for breaking horfes to their various motions and actions. Alfo, the exercife itfelf, or the art of riding, which teaches at the fame time to form the horfeman and the horfe.

MANE-SHEET, in the *Manege*, a covering for the upper part of a horfe's head, extending round his neck, with holes for the ears to pafs through, and joining to the halter upon the fore-part of the head, and likewife to the furcingle, or long girth, upon the horfe's back.

MANGANESE, in *Chemiftry*. The fpecific gravity of manganefe, according to Dr. John, is 8.013. A good deal of confufion ftill exifts refpecting the oxyds of this metal. According to Dr. John, there are three oxyds; the *green*, the *brown*, and the *black*. According to Berzelius, there are no lefs than five. Sir H. Davy could only obtain two, and Dr. Thomfon agrees with him in concluding there are but two; namely, the *olive* or *protoxyd*, which combines with acids, and forms the common falts of manganefe; and the *black* or *peroxyd*, which is found native. From the experiments of Dr. John and Berzelius, Dr. Thomfon fixes the weight of the atom of manganefe at 35, and of courfe that of its protoxyd at 45; from which data, if correct, the compofition of its falts may be eftimated. The following *erratum* exifts in this article in the Cyclopædia. Col. 3, l. 16, for malats *r.* metals; alfo in the fame col. paragraph 9, at the end of the fentence refpecting iron, add—Berzelius has lately fhewn, that manganefe is a conftituent of *caft iron.*

MANGE, a cutaneous difeafe, incident to many domeftic quadrupeds, and attended with an eruption and lofs of hair. Its caufes, according to Mr. Ryding, are, fudden changes of temperature, hot ftables, bad diet, and want of cleanlinefs. It is alfo communicated by infection, as when a found horfe rubs himfelf againft a ftall, in which a mangy horfe had been kept. Its fymptoms are, lofs of flefh, without any apparent caufe, a ftaring of the coat, and afterwards eruptions, difcharging a thick yellowifh matter, which forms a kind of fcurf that peels off, and a falling off of the hair. The diforder, though partial at firft, foon fpreads all over the body, and is attended with an itching, which caufes the horfe to rub againft every thing that comes in his way. It is faid, that with attention to cleanlinefs, an ointment compofed of 1 lb. of prepared hog's-lard, ½ lb. of fulphur, 3 oz. of white hellebore in fine powder, and olive-oil in fufficient quantity, rubbed over the affected parts, and repeated after an interval of three days, will after two or three applications complete a cure. Some fay, that if the animal's ftrength will allow it, the cure fhould be commenced with bleedings, and a ball formed of powdered nitre, powdered rofin, and caftile foap, of each ½ oz., 1 drachm of camphor in powder, and honey *q. s.* fhould be given in the evening. Attention fhould be paid to diet, exercife, and good grooming; the bowels fhould be kept in a proper ftate with mafhes, in which 1 oz. of nitre is diffolved; the affected part fhould be well wafhed with a ftrong folution of foft-foap, and afterwards rubbed morning and evening with an ointment compofed of 4 oz. of flowers of fulphur, 3 oz. of hog's-lard, and 2 oz. of quickfilver ointment. The ointment may be continued every other day, until the difeafe is removed. Two or three dofes of mild phyfic are recommended, and then a ball made of Æthiops' mineral, crude antimony in powder, and cream of tartar, of each ½ oz., and honey *q. s.* fhould be given every night for a month.

In a flight cafe, ftrong tobacco infufion with one-third part of ftale urine, ufed for wafhing the affected parts, will be fufficient; but as an efficacious unguent, the following is recommended; *viz* ½ lb. of quickfilver ointment, 4 oz. of finely powdered brimftone, 2 oz. of black foap, 1½ oz. of crude fal ammoniac, and oil of bays and turpentine *q. s.*; or tar, gun-powder finely pulverized, black foap, and oil of turpentine, of each about equal quantities; the fores may be wafhed twice a day with a lotion compofed of ½ oz. of muriated mercury (fublimate) in powder, diluted in 1½ pint of boiling water; or muriated mercury, muriated ammonia (crude fal ammoniac), of each from two to three drachms, and three half pints of boiling water.

MANHEIM, l. 3, *r.* 1282; l. 5, *r.* 2207; add—Alfo, a townfhip in Berks county, having 1354 inhabitants.

MANINGTREE, l. 18, *r.* 1811; l. 19, *r.* 1075—217.

MANNA, *Chemical Properties of.* Manna differs from fugar in feveral remarkable particulars. It diffolves very readily and abundantly in alcohol, and cryftallizes on cooling. Nitric acid converts it partly into oxalic, and partly into faclactic acid. It does not ferment like fugar, and of courfe yields no alcohol. The common manna of the fhops, according to Fourcroy and Vauquelin, confifts of four different ingredients. Pure manna conftituting about three-fourths of the whole—a little common fugar—a yellow matter with a naufeous odour, to which the purgative qualities of manna are chiefly owing—and a little mucilage, convertible into faclactic acid. Manna feems to be formed during the fermentation of many juices, fuch as the juices of the onion, melon, &c.

MANNINGTON. Add—containing, in 1810, 1664 inhabitants.

MANOR, l. 2, *r.* 2642.

MANSFIELD, l. 23, *r.* 1811—1427; l. 24, *r.* 6816.

Mansfield, in America, l. 3, *r.* 1810—2058; l. 6, *r.* 1030; l. 10, *r.* 38; l. 14, *r.*—In 1810 the number was 1810; l. 16, 2570.

MANTUA, a townſhip of Ohio, in Portage county, containing 243 inhabitants.

MARAZION, l. 15 and 13 from bottom, *r.* 1811—184—1022.

MARBLEHEAD, l. 4, *r.* 5900.

MARECHAUSSES, denoted, under the French monarchy, ſeveral ſmall bodies of troops, compoſed of officers and ſoldiers who had been in ſervice, that continued ſtationary in the principal towns, for the purpoſe of aiding the civil magiſtrate. That in Paris conſiſted of three companies; *viz.* the company belonging to the "Lieutenant criminel de "Robe au Courte," or to that particular court of judicature which was ſuperintended by the provoſt de la Marechauſſée, and which Charles IX. attached to the gendarmerie; the independent company of mounted police, called "Guet à Cheval;" and the company of the police or foot patrole, called "Guet à Pied," which was again ſubdivided into two companies, in order that one might do the duty of the quays. Theſe companies were under the immediate direction of the ſecretary of ſtate for the interior department of Paris.

MARGARIC Acid, in *Chemiſtry.* This acid exiſts in the form of pearly ſcales; hence the name. It was firſt deſcribed by Chevreul, who obtained it by digeſting a ſoap made of hog's-lard and potaſh in water. Part of the margarate of potaſh was diſſolved, while another part was depoſited in the form of pearl-coloured ſcales. The potaſh was afterwards removed by muriatic acid, and thus the margaric acid obtained in a ſtate of purity. Margaric acid is pearl-white. It is taſteleſs, and emits a ſmell ſomething like white wax. It melts at a temperature of 134°, and cryſtallizes on cooling into beautiful brilliant white needles. It is inſoluble in water, but very ſoluble in alcohol. It reddens vegetable blues very readily, and combines with all the baſes, eſpecially with the alkalies and alkaline earths, forming *ſalts*, or rather *ſoaps.* Dr. Thomſon, from the experiments of Chevreul, fixes the weight of the atom of this acid at 330.

MARGATE, col. 3, l. 9, *r.* 1811; l. 10, *r.* 6126—1229.

MARION, l. 2, *r.* 8884—2771.

MARK Island, a townſhip of Hancock county, in the diſtrict of Maine, with few inhabitants.

MARLBOROUGH, col. 2, l. 8 from the bottom, *r.* 1811—2579; l. 7, *r.* 445. Col. 3, l. 24, after lady Jane, *dele* unhappily for herſelf; l. 27, after favourite, *r.* who died in child-birth of Edward VI.; *dele* who was deſtined to ſuffer the fate of her predeceſſor.

Marlborough, in America, l. 4, add—containing 4996 inhabitants, of whom 1709 were ſlaves in 1810; l. 7, *r.* 1674; l. 12, *r.* 1810—1245; l. 14, *r.* 1112. Col. 2, l. 1, *r.* three; l. 2, after Pennſylvania, *r.* one in Montgomery county, having 672 inhabitants; and E. and W. Marlborough, in Cheſter county; the former having 1046, and the latter 917 inhabitants.—Alſo, a town of Hartford county, in Connecticut, having 720 inhabitants.—Alſo, a townſhip of Delaware county, in Ohio, containing 177 inhabitants:—l. 5, *r.* 1832.

MARLOW, Great, col. 2, l. 16 and 17, *r.* 1811—225—1166 perſons; add—and its borough to contain 468 houſes, and 2799 inhabitants; l. 20, add—in a pariſh of the ſame name, which contains 140 houſes, and 730 inhabitants.

Marlow, in America, l. 2, *r.* 564.

MARPLE, a townſhip of Delaware county, in Pennſylvania, having 649 inhabitants.

MARSELLOIS, *The*, or *Marſeilles Hymn*, a national march, adopted by the French during the courſe of the Revolution, and regularly played in their armies when they went to battle. It was frequently accompanied, or rather ſucceeded by the "ça ira," a lively tune; the former being calculated for ſlow or ordinary time, and the latter for quick movements. Both are now proſcribed.

MARSHFIELD, l. 25, *r.* 1811—272; l. 26, *r.* 1415.

Marshfield, in America, l. 4, *r.* 1364; l. 6, *r.* 513.

MARSHPEE, l. 3, *r.* 139.

MARTELLO, or Mortello, *Towers*, denoting ſmall caſtles erected for the defence of a coaſt; ſuch are thoſe of Romnay Marſh, of the iſland of Jerſey, Halifax in Nova Scotia, &c. Groſe derives the term mortello, from morta, whence mota or moat, which formerly ſignified a caſtle. Others derive it from the Italian "ſonare in campana a martello," to ſound the *alarm* bell, which, in ſome parts of Italy, is ſtruck by hammers. In old French, the word ſignifying the ſame thing, (now *marteau*,) was *martel*, and *martel en tête* was the adage for the rumour of annoyance or alarm.

MARTOCK, l. 2, *r.* 1623.

MARU. Add—This was the ancient capital of the province of Margiana, founded by Alexander the Great, and afterwards embelliſhed by Antiochus Nicator, who called it Antiochia. It was one of the four imperial cities of Khoraſſan; its fruits were finer than thoſe of any other place, and the walls were on all ſides ſurrounded with ſtately palaces, groves, and gardens. It was taken and pillaged by the Uſbecks about 25 years ago; ſince which time, it has gradually declined, and the population is now reduced to 3000 ſouls, under the government of Hyder Shah of Bokhara. The revenues of the khan are 20 maunds of grain, and 60,000 rupees annually. It is 88 furſungs from hence to Herat. *Dele* the next article.

MARY, queen of Scotland, l. 2, inſert (or 7th). Col. 2, l. 29, after their own, add—This article, ſays Mr. Chalmers, (*ubi infra*) denuded the Scottiſh queen, who was heir-preſumptive to the crown of England, of all future pretenſions to the crown. The ſtipulation, he ſays, ought to have been, not *in all times coming*, as expreſſed in the article, but *during the life of Elizabeth.* Conſidering, moreover, the defective powers of the French negociators to treat of a matter of that importance, in addition to the wording of the clauſe, theſe circumſtances created an inſuperable objection to the ratification of ſuch a treaty; which treaty was never ratified by the Scottiſh queen, or by any perſon under her authority. Col. 4, l. 8, for He *r.* Darnley; l. 20.—We know for certain, ſays Mr. Chalmers, that the king was murdered by Murray's faction, and that Morton, Bothwell, and Maitland, were the eminent characters who were attainted by parliament for the deed, though many inferior perſons, and ſome of the innocent, were tried and puniſhed for the ſame crime. But the queen, he ſays, as ſhe was not one of that faction, was not guilty; and every attempt of Robertſon and Laing to eſtabliſh her privity to this tranſgreſſion has failed. Col. 6, l. 28, after employers, add—Queen Elizabeth, it has been ſaid, wiſhed to have had Mary put to death privately by poiſon or by aſſaſſination, and actually ſuggeſted and expreſſed her wiſhes to this purpoſe, and ſhe thus acted ſuitably to the declaration made by her on Palm-ſunday 1572; *viz.* "that the queen of Scots' head ſhould never be quiet." At length, when her dark hints or more explicit inſtructions, communicated to Paulet and Drury her keepers, had failed of producing effect, preparations, &c.; l. 29, after publicly, add—but the privy-counſellors differed in their

opinion

opinion concerning the law by which ſhe ſhould be tried, whether it ſhould be the ſtatute of treaſons, (25 Edw. III.) or a late act of the 27th of Elizabeth, which had been made for this ſpecial occaſion. However, the laſt opinion prevailed. At the cloſe, add—Chalmers's Life of Mary, Queen of Scots, vol. i. 4to. 1818.

MARY, *St.* col. 2, l. 8, *r.* 12,794; l. 9, 6000; l. 13, add—in the county of Camden, which ſee.

MARYLAND. Add—See UNITED STATES.

MARYPORT, col. 2, l. 5 and 6, *r.* 1811—322—3134.

MASHAM, l. 7, *r.* 1811—213—1014.

MASOLES, the name of a militia in Croatia, which is bound to march to the frontiers whenever there appears the leaſt ſymptom of hoſtile diſpoſition on the part of the Turks. The private ſoldiers have lands allotted to them, which they cultivate for their own uſe, but receive no pay from the public. The officers are paid.

MASON, l. 7, *r.* 1077.

MASSACHUSETTS. Add—See UNITED STATES.

MASTODON, in *Natural Hiſtory*, a large quadruped, whoſe bones are found in a foſſil ſtate. It was for a long time confounded by naturaliſts with the mammoth or foſſil elephant. (See MAMMOTH, *Addenda.*) Cuvier has aſcertained, that the maſtodon is not only a diſtinct animal from the mammoth and the living ſpecies of elephants, but that it muſt be claſſed as a new genus. Five ſpecies of this genus have been at preſent diſcovered.

The *great maſtodon*, or the *animal of the Ohio*, the bones of which have been found in the greateſt abundance near the Ohio river, in the province of Kentucky, in North America, bears a conſiderable degree of reſemblance to the elephant in its tuſks and general oſteology, the form of the grinders excepted. It had probably a trunk, but this part being more periſhable than the bones has not been diſcovered. Cuvier concludes from its general ſtructure, that it could not have fed itſelf without the aid of a trunk. Its height did not ſurpaſs that of the largeſt elephant, but its body was longer, and its members were ſomewhat thicker; its belly was leſs extended than that of the elephant. Notwithſtanding the general reſemblance, the ſtructure of the grinders is ſo different, as to entitle us to claſs it as a different genus. It fed itſelf nearly in the ſame way as the hippopotamus and the wild boar, on the roots and pulpy parts of vegetables; and this kind of food would naturally lead it to moiſt and marſhy ground; but it was not made for ſwimming, or living under water, like the hippopotamus, but was really a land animal. Its bones are more common in North America than elſewhere, and are more freſh and better preſerved than any other known foſſil bones. Yet there is not the leaſt reaſon to believe, according to Cuvier, that there are any living maſtodons either in America or elſewhere. The moſt celebrated place where the remains of the maſtodon occur is called *Big-bone Lick*, on the ſouth-eaſt of the Ohio, five miles from the river, and thirty-ſix miles below the entrance of the Kentucky river, and nearly oppoſite the great Miami. The place where they occur is a ſalt marſh ſurrounded by hills. The bottom of the marſh is a black and fœtid mud. The bones are found in the mud and on the borders of the marſh at about four feet below the ſurface, but they occur alſo in various parts of North America in marſhy ſituations. In 1805, many bones of theſe animals were found in the county of Wythe, in Virginia, about five feet under the earth, upon a bed of lime-ſtone. One of the teeth weighed ſeventeen pounds. But what renders this diſcovery the more remarkable is, that a maſs of half-ground branches, roots, and leaves, incloſed in a kind of ſack, ſuppoſed to be the ſtomach, was found in the midſt of theſe bones, ſo as to leave no doubt that theſe were ſubſtances that the animal had devoured. Among the vegetable matter in this ſack were diſtinguiſhed the remains of ſome plants known in Virginia. The bones of the great maſtodon may be ſaid to be common in North America; two nearly entire ſkeletons were collected by Mr. Peale; one of the largeſt is preſerved in the Muſeum of Natural Hiſtory at Philadelphia, the ſmaller was exhibited in London a few years ſince. Theſe bones are ſcarce in other parts of the world; but wherever they have been found, it is at no great depth under the ſoil, and yet they are but little decompoſed. They are not rounded by attrition, and offer proofs that they have not been removed from the places where the animals died. The ſkeletons found near the river called the great Oſages were nearly in a vertical poſition, as if the animals had ſimply ſunk into the mud and been buried there. According to a letter from Mr. Smith Barton, profeſſor at the univerſity of Pennſylvania, to M. Cuvier, "An intelligent traveller had ſeen near that river thouſands of theſe bones, and had collected ſeventeen tuſks, ſome of which were ſix feet in length, and a foot in diameter; but the greater part of theſe bones was much decompoſed." Mr. Barton ſent a grinder to M. Cuvier, ſo that no doubt can be entertained that the bones belonged to the maſtodon. No remains of marine ſhells have been diſcovered with the bones of the maſtodon, as is the caſe with thoſe of the mammoth. Mr. Barton thinks, that the ſalt water of the marſhes where they are found has contributed to the preſervation of the bones. He ſtates alſo two inſtances which appear to prove that from time to time the ſoft part or fleſh of theſe animals has been dug up; a circumſtance which, from the heat of the climate, is much more aſtoniſhing than what is ſtated of the fleſh of the mammoth and rhinoceros being found in Siberia. (See MAMMOTH.) The Indians, who diſcovered five ſkeletons in 1762, relate, that one of the heads had a long noſe above the mouth; Mr. Barton ſuppoſes that this was in fact the trunk. Kalm, in ſpeaking of a great ſkeleton diſcovered by the ſavages in a marſh in the Illinois country, ſays, that the form of its *beak* was ſtill diſcoverable, though half decompoſed; it is probable that this was the root of the trunk.

Some doubts exiſt whether the maſtodon be really an extinct genus, and whether it may not be found living weſt of the Miſſouri. The Indians of Virginia, according to Mr. Jefferſon, ſay, that a troop of theſe formidable beaſts deſtroyed the deer, buffaloes, and other animals created for their uſe; when the great man above deſtroyed them all with his thunder, except the largeſt male, which preſenting its head to the thunder-bolts threw them off as they fell, but being at laſt wounded in the ſide, it fled towards the lakes, where it lives to this day.

The ſkeleton of the great maſtodon exhibited in England was near eleven feet high. From the ſize of detached bones, Cuvier conjectures that the animal never exceeded twelve French feet, but its body was much longer in proportion than that of the elephant.

The form of the crown of the molares or grinders is nearly rectangular. The ſubſtance of the teeth is of two kinds only, the inner or oſſeous part, and the outer or enamel, which is very thick, and has no kind of cement or cortical. This very important difference joined with the form brings this animal nearer to the hippopotamus and the pig, than to the purely herbaceous animals like the elephant.

The crown of the grinders is divided by deep open furrows into a certain number of tranſverſal ridges, and theſe ridges are again divided into two large irregular pyramidal obtufe points, a little rounded. The crown therefore is ftudded with thefe pyramidal points difpofed in pairs; it is however very different from the teeth of carnivorous animals, which have only one principal longitudinal furrow divided into leffer indentations, like a faw. The teeth of the elephant have on the crown feveral little tranfverfe walls, divided into a number of fmall tubercles, and thefe grow flat early, whereas the tubercles or cones on the tooth of the maftodon being much larger, the crown remains long mamillated. It was this circumftance of the grinders being ftudded with points that gave rife to the opinion of the maftodon being carnivorous.

The number of grinders, according to Cuvier, are fix on each fide, three above and three below.

The ftructure of the jaws indicates that the maftodon had tufks like the elephant or morfe. The number of tufks which occur with the teeth further confirms this opinion. A fkull was found by Mr. Peale which proves this fact, being furnifhed with alveoles. The curvature of the different tufks varies as much as in thofe of the elephant; but M. Cuvier thinks there is no ground for believing with Mr. Peale, that the tufks turned downwards.

The head of the maftodon being of vaft fize, and rendered exceedingly heavy by the teeth and tufks, which carried the centre of gravity far from the point of fupport, the neck was therefore neceffarily fhort, like that of the elephant; fo that without a trunk it could not have reached the ground with its mouth. Its tufks would alfo have deprived it of the power of eating on the ground; it is therefore certain that it muft have had a trunk like that of an elephant.

From the remains of the maftodon, it appears there were five fpecies, all of which are believed to be extinct.

1. The *great maftodon* that we have been defcribing.

2. The *maftodon with narrow grinders*. The remains of this fpecies have been dug up at Semorre, and many other places in Europe, and alfo in America.

3. The *little maftodon with fmall grinders*. This fpecies is much lefs than the preceding, and was found in Saxony.

4. *Maftodon of the Cordilleras*. This fpecies was difcovered in South America by Humboldt. Its grinders are fquare, and it appears to have been equal in fize to the great maftodon.

5. *Humboldean maftodon*. This, which is the fmalleft fpecies of the genus, was found in America by Humboldt. Thefe five fpecies may be confidered as forming a diftinct and hitherto unknown genus.

The following are the dimenfions of the fkeleton of the great maftodon found by Mr. Peale, and placed in the Mufeum of Natural Hiftory in Philadelphia.

	Feet	Inches
Height over the fhoulders - - - -	11	0
Do. over the hips - - - - -	9	0
Length from the chin to the rump -	15	0
From the point of the tufks to the end of the tail, following the direction of the curve	31	0
In a ftraight line - - -	17	6
Width of the hips and body - -	5	8
Length of the largeft vertebra -	2	3
Of the longeft rib - - -	4	7
Of the tufks - - - - -	10	7
Circumference of one tooth - - -	1	6½

The weight of the whole fkeleton is 1000 lbs.

MATHEWS, in *Geography*, a county of Virginia, containing 4227 inhabitants, of whom 2098 were flaves in 1810.

MATHIOLA, or rather MATTHIOLA, in *Botany*, Brown in Ait. Hort. Kew. v. 4. 119. See our former article. Mr. Brown has reftored this meritorious name, to defignate a new genus of his own, extracted from the more hoary kinds of CHEIRANTHUS, (fee that article,) n. 16, 17, 20, 24, 31, 28, and 15. We allow a difference of habit, but fcarcely perceive a fufficient character.

MATLOCK, l. 14, *r*. 1811—523—2496.

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MAURICE, l. 4, add—The town contains 2085 inhabitants.

MAURY, a county of Weft Tenneffee, containing 10,359 inhabitants, of whom 2626 were flaves in 1810.

MAWS, ST. In 1811, the parifh of St. Juft contained 272 houfes, and 1639 perfons; *viz*. 751 males, and 888 females: 72 families being employed in agriculture, and 99 in trade, manufactures, and handicraft.

MAYOMBA, or MAJUMBA, *Cape*, a cape on the coaft of Africa, in S. lat. 3° 34′. E. long. 11° 13′ 36″.

MEAD, a townfhip of Crawford county, in Pennfylvania, containing 786 inhabitants.

MEADVILLE, l. 5, after houfes, add—457 inhabitants.

MECKLENBURG, l. 2, *r*. 18,453 inhabitants, of whom 16,264 were flaves in 1810; l. 6 and 7, *r*. 14,272—3494.

MECONIC ACID, in *Chemiftry*. See MORPHIA, and OPIUM.

MECRAN, or MEKRAN. At the end, Kidge or Kej, add—The population of Mekran is formed of many different tribes and independent chiefs, of which the Balouches are the moft numerous; a middle-fized race of men, fpare, mufcular, and active, and armed with a match-lock, fword, fhield, and dagger. The common language of the country is a corrupt Perfian, mixed with Scindi, and the Balouches in general are of the Soonee perfuafion. Thofe of the central territories refide moftly in towns; thofe of the lower countries are fcattered over the plains, in hamlets of eight or ten huts, built of branches of palm, and covered with mats. The Balouches take, in general, but one wife, and their chiefs four; they are faid to have great influence in the difputes of their tribes. The women of Mekran are allowed to appear indifcriminately in public. Mekran was formerly under the dominion of Naffer Khan, the chief of Kelat; but fince his death, in 1795, the authority of his fon has ceafed, and of the dominions of his father he only retains poffeffion of the fort of Kej. The whole force of the country, it is thought, may amount to about 25,000 men, whom it would be impoffible to collect or to induce to concur in action. The revenues of this country are trifling.

MEDFIELD, l. 3, *r*. 786.

MEDFORD, l. 6, *r*. 1443.

MEDICAL ELECTRICITY. Since our remarks on *medical electricity* (fee *Medical* ELECTRICITY) were written, a method has been announced, in fome degree new, of exhibiting this remedy, which we fhall very briefly notice here. This confifts in employing a jar coated on the outfide with paper tinfel, and inftead of a coating on the infide, having only a fpiral coil of wire in contact with its furface. On making the experiment, we find the fhock is modified and foftened by this contrivance. It appears, therefore, much better adapted for adminiftering what is commonly called *vibratory* fhocks, (that is to fay, fmall fhocks in very quick fucceffion,) than the jar commonly ufed for the purpofe. We omitted to mention that this method of exhibiting electricity (called *vibratory*) is commonly practifed by electricians, chiefly from its requiring

requiring a very fmall apparatus, and from its being at the fame time equal, or nearly fo, in effect to a large current of fluid produced from a very powerful machine.

MEDOMAN, in *Geography*, a town of America, in Maine, and county of Lincoln, having 121 inhabitants.

MEDULLIN, in *Chemiftry*, a name given by Dr. John to the pith of the *funflower*, the *fyrynga vulgaris*, &c. and which, according to him, is diftinguifhed by the following properties. It is infoluble in water, alcohol, ether, and oils. It has neither tafte nor fmell. It is foluble in nitric acid; but inftead of forming fuberic acid, furnifhes a quantity of oxalic acid. Its ftructure is peculiar, and when burnt it leaves a charcoal having a metallic bronze-like appearance.

MEDWAY, in America, l. 4, *r.* 1213.

MEERSCHAUM. See Meerschaum, and Mineralogy, *Addenda*.

MEGALONIX, in *Natural Hiftory*, an extinct fpecies of quadruped, about the fize of an ox, whofe remains were firft difcovered in Virginia. It was fuppofed by Mr. Jefferfon to be allied to the lion, and hence received its name. According to Cuvier, however, the megalonix and megatherium are nearly allied, and may be confidered as belonging to the fame genus, which may be placed between the floth and the ant-eaters, but nearer to the former than the latter. The remains of thefe animals have hitherto been found only in America, where floths and ant-eaters at prefent exift. See Megatherium, *Addenda*.

MEGATHERIUM. (See Megatherium.) The animal defcribed in the former part of that article, whofe remains were found in Siberia, and noticed by Mr. Adams, was not the megatherium of Cuvier, but the foffil or extinct elephant. (See Mammoth, *Addenda*.) The megatherium was of the fize of the rhinoceros; its foffil remains have hitherto been found only in South America. The firft and moft complete fkeleton was fent from Buenos Ayres in the year 1789. It was found in digging in alluvial foil, on the banks of the river Luxten, a league S.E. of the village of that name, and three leagues W.S.W of Buenos Ayres. A fecond fkeleton was fent from Lima to Madrid in the year 1795; and a third was found in Paraguay. This animal differs from the megalonix chiefly in magnitude, being much larger. See Cuvier's defcription in the latter part of the article Megatherium.

MEGIDDO, or Megedo, in *Scripture Geography*, a city of Manaffeh (Jofh. xvii. 11. Judg. i. 27.), famous for the defeat of king Jofiah. (1 Kings, xxiii. 29, 30.) Herodotus, fpeaking of this victory, fays, Necho obtained it at Magdolor, lib. ii. cap. 159.

MEIGS, in *Geography*, a townfhip of Adams' county, in Ohio, having 835 inhabitants.

MEKRAN. See Mecran.

MELDRUM. In 1811, the parifh of Old Meldrum contained 411 houfes, and 1635 perfons; *viz.* 736 males, and 919 females: 345 families being employed in agriculture, and 86 in trade, manufactures, and handicraft.

MELFORD, Long, l. 5 and 6, *r.* 1811—415—2068—951—1117.

MELLIT, in *Farriery*, a dry fcab growing upon the heels of the forefoot of a horfe, which is cured by a mixture of half a pound of common honey, and a quarter of a pound of black foap, with four or five fpoonsful of vinegar, half an ounce of finely powdered alum, and two fpoonsful of fine flour, applied to the affected part, after removing the hair, like a plafter, and fuffered to remain five days. If the cure be not completed, the leg, foot, and fore, fhould be wafhed, and the fame application repeated.

MELMOTH, col. 2, l. 20 and 21, *r.* thus—The author of ' The Purfuits of Literature' fays, " Mr. Melmoth is a happy, &c.

MELROSE, l. 12. In 1811, this parifh contained 538 houfes, and 3132 perfons; *viz.* 1531 males, and 1601 females: 239 families employed in agriculture, and 251 in trade, &c.

MELTON-MOWBRAY, l. 24 and 25, *r.* 1811—451—2115.

MENALLEN, a townfhip of Fayette county, in Pennfylvania, having 1228 inhabitants.

MENANGEEBOW, for Menangeabow.

MENDHAM. Add—containing 1277 inhabitants.

MERA, l. 14 from bottom, after Linga, add a comma.

MERCER, after acres, add—16 townfhips, 8277 inhabitants; l. 6, 11,587 inhabitants, of whom 3000 were flaves in 1810.—Alfo, a townfhip of Mercer county, having 262 inhabitants.—Alfo, a townfhip of Butler county, in Pennfylvania, having 588 inhabitants.—Alfo, a townfhip of Maine, in Somerfet county, having 562 inhabitants.

MERCURY, p. 12, col. 2, l. 12 from bottom, for Todd *r.* Thomfon.

Mercury. This metal boils, according to Crichton, at 656°; according to Heinrich at 658¼°. Thefe differences refpecting the boiling point of this metal, as well as thofe mentioned in the original article, probably arife in part from the mode in which the thermometers employed were graduated. See further on this fubject under Heat.

There are but two oxyds of mercury known, and not three, as ftated in the Cyclopædia, the *black* or *protoxyd*, and the *red* or *peroxyd;* the firft of which, according to Dr. Thomfon's recent determinations, is a compound of 100 mercury + 4 oxygen; and the fecond, 100 mercury + 8 oxygen. Hence the weight of an atom of this metal will be 250, and from this the compofition of its falts may be deduced. (See Atomic *Theory*.) What has been faid in our original article refpecting *calomel* and *corrofive fublimate*, formerly termed *fubmuriate* and *oxymuriate* of mercury, is now to be underftood, according to the prefent views of their compofition, as applicable to the *protochloride* and *perchloride* of mercury. See further on this part of the fubject under Chlorine.

MERDIN, l. 7. Its inhabitants amount to nearly 11,000 fouls; l. 9, add—their number is fuppofed to be 1500, having feveral churches, and a patriarch, and befides here are 200 Jews, and alfo Turks, Arabs, and Kurds. At the end, add—it is 46 furfungs from Diarbekr. It is the frontier of the pachalic of Bagdad, towards Conftantinople, and under the government of a Muffaleem, appointed by the pacha.

MEREDITH, l. 4, *r.* containing 1940 inhabitants.

MERIDEN, a town of New Haven county, in Connecticut, having 1249 inhabitants.

MERION, l. 3, *r.* 1156—1835.

MERIONETHSHIRE, col. 5, l. 37 and 38, *r.* 1811—6022—30,924—14,308—16,616—3619—1270.

MERRIMACK, l. 3, *r.* 1048.

MERTHYR-TYDVIL, col. 2, l. 30, add—in its five hamlets, by the parliamentary returns of 1811, is ftated to amount to 11,104 perfons, occupying 2264 houfes.

MERTON, l. 4, *r.* 1811; l. 5, *r.* 135—905.

Meru-Shah-Jehan. See Maru.

MESCHID, Maschid, or *Mefhed*, l. 1, infert—the capital of the Perfian divifion of the province of Khoraffan, fituated about two furfungs from the ruins of the ancient city of Tous, and celebrated for a very fuperb fepulchre, containing the relics of Imam Reza, and thofe of the caliph Haroun ul Rufchid. This city, though a great part of it is in ruins, has a population of 50,000 souls. The bazaar is well supplied with fruits and provisions, from the fertile plain on which the city stands. It is surrounded with a strong wall, three fursungs in circumference, and the great bazaar is three miles in length. The city is governed by one of the king's sons, and with the districts belonging to it yields a revenue of 90,000 tomauns. It carries on a considerable trade with Bokhara, Bulkh, Candahar, Yezd, and Herat. Velvets of the finest quality are manufactured here; and its fur pelisses are much esteemed.

MESHED. See MESCHID.

MESHED *Ali*. See NEJIFF.

METAL, in *Geography*, a township of Franklin county, in Pennsylvania, having 1236 inhabitants.

METALS, in the *Materia Medica*, col. 2, l. 24, for Todd *r.* Thomson.

METEORIC IRON. See MINERALOGY, *Addenda*.

METHERVAN, in *Geography*, a town of Essex county, in Massachusetts, containing 1181 inhabitants.

METHWOLD, col. 2, l. 4, *r.* 1811—942—174.

METROXYLON, in *Botany*, a name given by Rottboll, in the Copenhagen Transactions, to the true Sago Palm, described from Dr. Kœnig's manuscripts, by Mr. Charles Konig, in Ann. of Bot. v. 1. 195. t. 4. This genus appears to differ from Gærtner's SAGUS, (see that article,) in having a *corolla;* which is monopetalous and three-cleft. See SAGO.

MEXICO, col. 15, l. 21 from bottom, add—The industrious researches of the ingenious and philosophical traveller M. Humboldt have established the remarkable fact, that in the whole of the New Continent, there is nothing which indicates the existence of alphabetical writing, nor any very near approach to it. Although the use of hieroglyphic paintings was common among the Toltecks, Aztecks, and other tribes, which, since the seventh century, have appeared successively on the elevated plain of Anchuac, Humboldt suggests, that the progressive perfection of symbolical writing, and the facility with which objects were painted, prevented the introduction of letters. It is alleged, that they have done so for a much longer time with the Chinese.

MIAMI, a township of Clermont county, in Ohio, containing 1670 inhabitants.—Also, a township of Greene county, in Ohio, having 794 inhabitants.—Also, a township of Hamilton county, in Ohio, having 495 inhabitants.—Also, a county of Ohio, containing 6 townships, and 3941 inhabitants.

MICHIGAN. Add—The territory of Michigan includes four districts, *viz.* Detroit, Erie, Huron, and Michilimaclik, and by the census of 1810, 4702 inhabitants, of whom 24 were slaves.

MICKLEHAM, col. 2, l. 1, *r.* 1811; l. 2, 416 persons, occupying 54 houses; l. 3, 190—226.

MICROPETALUM, in *Botany*, from the *smallness* of the *petals*.—"Pers. Syn. v. 1. 509." Pursh 319. (Spergulastrum; Michaux Bor.-Amer. v. 1. 275.)—Class and order, *Decandria Tetragynia*. Nat. Ord. *Caryophyllei*, Linn. Juss.

Ess. Ch. Calyx of five spreading leaves. Petals five, minute, undivided; or wanting. Stigmas four, sessile. Capsule ovate, longer than the calyx, of four valves.

1. M. *lanuginosum*. Mich. n. 1.—Densely downy. Flower-stalks solitary. Petals none.—On the mountains of Virginia and Carolina, perennial, flowering in June and July. *Leaves* lanceolate, tapering down into a footstalk.

2. M. *lanceolatum*. Mich. n. 2.—Smooth. Leaves lanceolate, tapering at each end. Flowers panicled. Petals ovate, very short.—On moist rocks, from Canada to Pennsylvania, perennial, flowering in July. *Stigmas* sometimes only three. *Michaux*.

3. M. *gramineum*. Mich. n. 3.—Very smooth. Leaves linear. Panicle terminal, lax, slender. Petals lanceolate, as long as the calyx.—About springs and shady rocks, from New York to Virginia, perennial, flowering in June and July. *Pursh*. Resembles *Stellaria graminea*. *Michaux*.

Mr. Pursh speaks of *Arenaria fasciculata* as probably belonging to this genus, but we know not whether he intends the plant of Linnæus, or of Jacq. Austr. t. 182; see Engl. Bot. t. 1744.

MIDDLEBOROUGH, l. 3, *r.* 4400.

MIDDLEBURY, l. 6, *r.* 2188; add—Also, a town of New Haven, in Connecticut, having 847 inhabitants.

MIDDLEFIELD, l. 3, *r.* 822.

MIDDLE HERO, a township of Grand Isle county, in Vermont, having 623 inhabitants.

MIDDLESEX, col. 2, l. 4, *r.* 1811—130,613 houses, 953,276 inhabitants; *viz.* 434,633 males, and 518,643 females: of whom 135,398 families are employed in trade and manufactures, and 9088 in agriculture.

MIDDLESEX, in America, l. 5, *r.* 44; l. 6, *r.* 52,789. Col. 2, l. 9, *r.* 8—20,723; l. 10, *r.* 57 were slaves in 1810; l. 14, *r.* 20,383; add—Also, a township of Chittenden county, in Vermont, having 401 inhabitants.—Also, a township of Butler county, in Pennsylvania, containing 568 persons.

MIDDLETON, l. 3, *r.* 541; l. 8, after houses, add—2014 inhabitants.

MIDDLETON, except the city, a township, containing 3368 inhabitants.—Also, a township of Columbiana, in Ohio, having 579 inhabitants.

MIDDLETON, col. 2, l. 23, *r.* 1811; l. 24, *r.* 4422 persons, occupying 805 houses.

MIDDLETOWN, l. 3, add—containing 439 inhabitants; l. 4, add—having 1207 inhabitants; l. 7, *r.* 976; l. 17, *r.* 3849; l. 33, after county, add—containing 948 inhabitants; l. 34, after Cumberland, add—having 2351, and the third in Bucks county, having 1462 inhabitants.

MIDDLEWICH, col. 2, l. 10, *r.* 1811; l. 11, 279—1232.

MIDHURST, l. 8, *r.* In 1811, the borough and parish contained 1256 persons, occupying 196 houses; 60 families being employed in agriculture, 127 in trade and manufactures.

MIEMITE. See MINERALOGY, *Addenda*.

MIFFLIN, l. 4, *r.* nine; l. 9, *r.* this county contains 12,132. Add—Also, a township in Allegany county, in Pennsylvania, containing 637 inhabitants.—Also, a township of Ross county, in Ohio, with 445 inhabitants.

MILBORNE PORT, col. 2, l. 7, *r.* 1811, l. 8, *r.* population of this borough and parish amounted to 1000 persons, occupying 224 houses; 474 being males, and 526 females: of whom 132 families were employed in trade, and 78 in agriculture.

MILDENHALL, l. 25, *r.* 1811; l. 26, *r.* 2493, occupying 351 houses; 1187 being males, and 1306 females:—278—112.

MILFORD, col. 3, l. 39, 40, *r.* 1811—1961, the number of houses being 352.

MILFORD, in America, l. 2, containing 2095 inhabitants; l. 3, 973; l. 11, containing 2033 inhabitants; l. 18, and 2674 inhabitants.—Also, a town of Hillsborough county, in New Hampshire, containing 1117 inhabitants.—Also, a township of Wayne, in Pennsylvania, having 87 persons.—Also, a township of Somerset county, in the same state, with

with 1180 inhabitants.—Alfo, a townfhip of Butler county, in Ohio, having 1037 inhabitants.

Milford, *New*, a town of Litchfield county, in Connecticut, having 3537 perfons.—Alfo, a townfhip of Luzerne county, in Pennfylvania, having 178 inhabitants.

MILK, col. 5, l. 29 from bottom, for oxifying *r.* offifying.

Milk, *Chemical Properties of.* According to Berzelius, 1000 parts of milk deprived of its cream confift of

Water - - - -	928.75
Curd with a little cream -	28.00
Sugar of milk - - -	35.00
Muriate of potafh - -	1.70
Phofphate of potafh -	.25
Lactic acid, acetate of potafh, with a trace of lactate of iron - - - -	6.00
Earthy phofphates - -	.30
	1000

In the paragraph defcribing the fermentation of mares' milk by the Tartars, l. 2, after brandy, add—called *Koumifs.*

After the paragraph upon cream, add—Cream of the fp. gr. 1.0244 was found by Berzelius to confift of

Butter - - - -	4.5
Cheefe - - - -	3.5
Whey - - - -	92.0
	100

After the obfervations on curd, add—*Curd* has many of the properties of coagulated albumen. It is white and folid, and when all the moifture is fqueezed out, it has a good deal of brittlenefs. It is precipitated by acids, and the precipitate confifts of the curd combined with the acid employed. If this precipitate be digefted with carbonate of lime or barytes in water, the acid combines with the earth, remains undiffolved, (fuppofing the fulphuric acid employed,) and leaves the curd in folution. The aqueous folution of curd thus obtained is yellowifh, and refembles a folution of gum. When the folution is boiled in an open veffel, it becomes covered with a white pellicle, precifely as milk does, and acquires the fmell of boiled milk. The membrane is almoft infoluble in water, and appears to be produced by the action of the air on the diffolved curd. With the mineral acids, curd forms the fame compounds as albumen and fibrin do; but the neutral compounds are lefs foluble. A great excefs of acetic acid is required to diffolve curd, and the neutral compound of curd and this acid appear infoluble. According to the analyfis of Gay Luffac and Thenard, curd is compofed of

Hydrogen - - -	7.429
Carbon - - - -	59.781
Oxygen - - -	11.409
Azote - - -	21.381
	100

MILL Creek, in *Geography*, a townfhip of Hamilton county, in Ohio, having 1334 inhabitants.

MILLEDGVILLE, a town of Georgia, in the county of *Baldwin;* which fee.

MILLVILLE. Add—containing 1032 inhabitants

MILNTHORP, l. 2, *r.* Haverfham; l. 14, after population, add—of the townfhips of Milthorpe and Haverfham; l. 15, *r.* 1811—1138—242 houfes; l. 16, 546—592—129—111.

MILTON, l. 8 and 7 from bottom, *r.* 1811—307—1746.

Milton, in America, l. 9, *r.* 1264; add—Alfo, a town of Strafford county, in New Hampfhire, having 1005 inhabitants.—Alfo, a town of Chittenden county, in Vermont, containing 1546 inhabitants.

MILVERTON, l. *ult. r.* 1811—1637; add—and number of houfes 322.

MINCHIN-HAMPTON, l. 27, *r.* 1811—town and parifh; l. 28, *r.* 3246, and occupying 710 houfes; l. 29, 1523 males, and 1723 females.

MINEHEAD, l. 3, *r.* 144.

Minehead, l. 3, after England, add—By the returns in 1811, the borough and parifh were ftated to contain 255 houfes, and 1037 inhabitants; 443 being males, and 594 females.

MINERAL Caoutchouc. See Mineralogy, *Addenda.*

MINERALOGY, according to the moft eminent mineralogifts of the French fchool, comprifes the ftudy of all inorganic fubftances that exift naturally in the earth, or on its furface. According to this comprehenfive definition, water, air, and all ponderable elementary matter, may be claffed with minerals. The German mineralogifts ufe the term *mineral* in a more reftricted fenfe. See Mineralogy, where is given a hiftory of the progrefs of this fcience, and an outline of the fyftems of Werner and Haüy. For a more full account of the external characters of minerals, and of the fyftem of claffification introduced by Werner, fee Oryctognosy: and for the leading principles of cryftallography, on which the fyftem of Haüy is formed, fee Crystallography, *Addenda.* Under the article Systems of Mineralogy, we have given a fummary view of the chemical fyftem of mineralogy recently attempted to be introduced by the diftinguifhed Swedifh philofopher Berzelius.

Mineralogy has fcarcely been cultivated as a regular fcience in Europe longer than fifty years, and in England it has not excited much attention until the prefent century; fince which time our acquaintance with the mineral kingdom has been rapidly extending. We propofe in the prefent article to defcribe thofe minerals which have been recently difcovered, or whofe characters have been more accurately known fince the articles were written in which they were defcribed. Many minerals having received feveral different names, we have alfo deemed it expedient to give an alphabetical lift of all the known fpecies of minerals, with references to the particular name under which each is defcribed. This will, we truft, in a confiderable degree, remedy the inconvenience refulting from the ufelefs multiplication of names; an evil which, in this department of fcience, tends greatly to retard the progrefs of ufeful knowledge. To Werner, we are indebted for the firft precife definition of the external characters of minerals; but unfortunately both he and the mineralogifts of the Freyberg fchool have introduced fuch a multiplicity of divifions, fubdivifions, and minute diftinctions into the fcience, with fo many quaint terms to exprefs what was before perfectly definite in the language of common life, that the defcription of the moft intelligible properties is often rendered harfh and obfcure to the ftudent. This is greatly to be regretted, as it prevents many from cultivating mineralogy, deterred by a parade of frivolous diftinctions which affail them in limine. The

The characters of minerals, arranged according to the Wernerian method, are enumerated under the article ORYCTOGNOSY; but a selection of the most important ones, with a further definition of some of them, appears necessary to render more complete this department of our work, and to enable the general reader to understand the descriptive language used by mineralogists. The characters of minerals are either *physical* or *chemical*. Physical characters are those properties which can be discovered without decomposing or changing the nature of minerals: under this term we comprise the external characters of Werner, and also some of those properties which are elicited by the action of other bodies on the mineral examined, such as magnetism and electricity.

Chemical characters in mineralogy are those properties which are most easily discovered by the action of heat, of acids, and of various re-agents. It is in this limited sense that these characters are understood by the mineralogist. A complete analysis of minerals belongs to chemistry.

In our enumeration of physical characters, we shall commence with those which depend on the action of light; namely, colour, transparence, lustre, and refraction.

Colour is regarded by the German mineralogists as an important character, and it is that which first arrests the attention of the observer; but in earthy minerals, the colours of the same species are often so various, that this character loses much of its value as applied to them. The colours of minerals, as far as they have been chemically examined, are principally owing to metallic oxyds and inflammable matter: the earths, the acids, and the alkalies, in a state of purity, are white or colourless. The colour of earthy minerals may, therefore, be regarded for the most part as arising from accidental admixtures with unimportant ingredients. But in the inflammable minerals and metallic ores, and in a few of the earthy minerals, the colouring matter is as important as the other parts, and generally more so; hence in the latter, the colour varies but little in each species, and is a character of importance precisely in proportion to its simplicity. For an enumeration of the different varieties of each colour, and the minerals in which they are most characteristic, and for change of colour, see ORYCTOGNOSY.

Transparence, in its different degrees, from perfect transparence, semi-transparence, translucence, and opacity, are terms perfectly intelligible to every reader. When the cloudiness in semi-transparent minerals increases, so that the outline of objects can scarcely be seen, translucency commences, as in common chalcedony.

Double Refraction, or *Duplicating*, is the property which some transparent minerals possess of presenting a double image of an object when seen through them in particular directions, of which calcareous spar, an Iceland crystal, offers a remarkable example. See CRYSTAL OF ICELAND.

Opalescence, a term not unfrequently applied to some minerals, is thus defined by Mr. Jameson: "Some minerals, when held in a particular direction, reflect from some single spots in their interior a coloured shining lustre; this is what is understood by opalescence: it is distinguished into *simple* and *stellular*; in the latter, the lustre diverges in six rays in the form of a star, as in the *star-sapphire*."

Lustre.—The lustre of a mineral produced by the reflection of light is of different kinds, and is called metallic, semi-metallic, adamantine, pearly, resinous, and vitreous. Perfectly opaque minerals, as the metals, and most of the metallic sulphurets, reflect the light wholly from the surface without undergoing any refraction, and exhibit the metallic lustre of various degrees of intensity; and the lustre is increased, and the colour is unchanged, when a scratch is made in them with a knife or file. Minerals having a semi-metallic lustre yield a lighter colour, or have their lustre destroyed when scratched. The adamantine lustre is exhibited by minerals which are translucent, and possess great refractive power; the lustre is reflected from the interior of the mass with great vivacity, and is produced both by reflected and refracted light. Examples, the diamond, sulphur, and the native salts of lead. In these minerals, though the lustre is increased by polishing, yet its particular character is less distinct, owing to the increased reflection of unrefracted light from the surface.

The pearly or nacry lustre is well exhibited in some kinds of zeolite, and in kyanite. When it proceeds from fibrous minerals, as in satin spar and fibrous gypsum, it is sometimes called a silky or satiny lustre.

The resinous lustre is well represented by that of pitch: it exists in pitch-stone and resinous flints.

The vitreous lustre is perfectly represented in rock-crystal.

Each of these kinds of lustre may vary in degree from the most splendent, which can be seen at a great distance, to shining, glistening, or glimmering. When entirely destitute of lustre, a mineral is called dull.

The *streak* implies the colour or lustre which a mineral exhibits when scratched with a knife or file: the colour is the same as that of the mineral when pulverized.

Soiling is a character that occurs in some soft minerals, which leave a mark when drawn on the surface of other bodies, or on the fingers, as plumbago, chalk, and reddle.

The above are the principal characters depending on the action of light.

Phosphorescence.—Certain minerals give out light when rubbed against each other, as quartz; or when scratched with a knife, as dolomite. Other minerals give out light when thrown on hot coals, or heated iron, as fluor spar; and certain minerals emit light when exposed to the action of the blow-pipe.

Hardness and Solidity.—Solids are the only bodies to which the terms hard or soft can properly be applied. In common language, hardness and frangibility are often confounded. A stone that endures many heavy blows before it breaks, is considered as harder than another which requires fewer blows for its fracture; but the property which different minerals have of resisting the point of a knife or file of hardened steel, or the effect produced when a mineral is rubbed on other minerals, or scratched by them, is the most unexceptionable test of their hardness. Thus some minerals scratch crystallized quartz, a stone easily recognized, and whose hardness in that state is always the same; other minerals scratch steel, glass, fluor spar, &c. This method is precise, and gives the real hardness of the parts; whereas striking fire with steel, which is often mentioned as a character, is a vague test, subject to variation from the form of the mineral, the sharpness of its edges, &c.; and soft minerals not unfrequently contain minute grains of harder ones, which will give sparks with steel.

As a knife is the most convenient and portable instrument for determining the hardness of most minerals, except gems, the following judicious observations on the use of it, by Mr. Aikin, are deserving the attention of the student. In fibrous minerals, a scratch directed across the fibres will always indicate a lower degree of hardness than the true one; for the fibrous structure presenting an alternation of ridges and furrows, the knife glances across the intervals, thus interrupting the uniformity of the stroke, and producing a succession of small blows, which rather break down than divide the summits

summits of the ridges. The hardness should, therefore, be tried by a scratch parallel to the direction of the fibres, or, still better, on the surface of the transverse fracture. Another precaution is always to select a second undecomposed specimen to make a trial of the hardness, this character being affected sooner than any other by the spontaneous alteration of a mineral. In examining the relative degree of hardness of two minerals, by trying which will scratch the other, it is necessary to be aware that the solid angles and edges of the primitive forms are very sensibly harder than those of the derivative forms, or than the angles or edges produced by casual fracture, either of crystals or massive varieties of the same species. This fact has been long known to diamond-cutters, who always distinguish between the hard and soft points of the gem, that is, between the solid angles belonging to the primitive octahedron, and those belonging to any of its modifications, the latter being easily worn down by cutting or rubbing them with the former.

The whole range of hardness obtained by the use of the knife may be thus classed. When a mineral does not yield to the point of a knife, it may be called *very hard*, as quartz and flint. When it yields with great difficulty, it may be called hard, as felspar. When a mineral yields more readily than the former, it may be called *semi-hard*, as hornblende and fluor spar. When it is easily scratched with a knife, it is called *soft*, as calcareous spar and barytes. And when it yields to the nail, *very soft*, as gypsum and chalk.

Tenacity.—By this property is understood the relative mobility of the particles of minerals, and the different degrees of coherence. In some metallic minerals, particularly native gold and silver, the particles, though they cohere with great force, are capable of a considerable degree of motion, and may be cut with a knife or extended with a hammer. Such minerals are called *malleable.* When a mineral may be cut into fragile shavings, or coarse grains, adhering to the knife, it is called *sectile*, as in plumbago and soap-stone. When on cutting a mineral with a knife, the particles dart off with a grating noise, it is said to be *brittle.* All hard minerals, and the greater number of semi-hard minerals, are brittle, as quartz and fluor spar.

Frangibility.—By this property is understood the resistance which minerals oppose to the stroke of a hammer before they are broken into fragments. The degrees of frangibility depend partly on the cohesion of the particles, and partly on the structure of the mineral. Frangibility must not be confounded with hardness; many soft minerals are more infrangible than hard ones. Quartz is much harder than hornblende, but may be broken with greater facility. The brittle minerals are the most frangible, whilst those which yield to the knife and are sectile are generally very tough; and the malleable minerals, such as native gold, can scarcely be said to be frangible.

A mineral is more easily frangible by a sharp blow from a small hammer, than by a heavier blow from a large hammer; hence this property appears to depend much on elasticity. Some earthy minerals, as beryl, flint, and topaz, are more frangible when first obtained from their native beds, than when they have been exposed for some time to the atmosphere, owing to their containing a portion of moisture which is afterwards evaporated. The degrees of frangibility, from very difficultly frangible to very easily frangible, are enumerated under ORYCTOGNOSY.

Some earthy minerals, and all malleable minerals, bend without breaking, or are flexible; and some minerals are both flexible and elastic, as mica.

Structure of Minerals.—This is the internal arrangement of the particles of a mineral. The three great divisions of structure are, the *perfectly crystalline, imperfectly crystalline*, and the *promiscuous structure.* The perfectly crystalline structure is described under the article CRYSTAL; and the Wernerian description of crystalline forms will be treated of in the following section. For the imperfectly crystalline and promiscuous structure, see STRUCTURE *of Minerals*, where these important characters are described. The structure of minerals is ascertained by the number of joints, or determinate directions in which a mineral can be split, or exhibits distinct laminæ. This is called the cleavage by the German mineralogists.

When a mineral splits in one direction, it is said to have a single cleavage, as in mica. The cleavage may be double, as in felspar; triple, as in calcareous spar; quadruple, as in fluor spar; or six-fold, as in blende and rock-crystal.

The Wernerian system takes no measure of the angles under which the planes or laminæ of a mineral meet, except as being rectangular, equiangular, or oblique. But the angular measurement of the inclination of the planes forms the basis of Haüy's system of crystallography. (See CRYSTAL and GONIOMETER.) According to Werner, the two-fold cleavage is described either as rectangular, (examples, felspar and hyacinth,) or oblique, as in hornblende.

In the triple cleavage, the laminæ may intersect each other rectangularly, as in lead-glance or galena; or the cleavage may be oblique, but equiangular, as in calcareous spar; or oblique and at unequal angles, as in heavy spar; or may be partly rectangular and partly oblique, as in selenite.

The four-fold cleavage may either be equiangular and oblique, as in fluor spar and the diamond, or three cleavages may be equiangular and oblique in the common axis of the crystal, and intersected by a fourth, which is at right angles with the axis, as in beryl.

In the six-fold cleavage, all the laminæ may meet under equal oblique angles, as in rock-crystal, or three of the cleavages may form equal and oblique angles in a common axis, and be obliquely intersected by three others, which also intersect the axis in an oblique direction.

Fracture.—This property is carefully distinguished from the structure by Haüy. The fracture is the casual division of the whole into fragments, and depends much on the kind of stroke by which it is produced, whereas the structure exists in the mineral before it is broken. Fracture is either *conchoidal*, which is composed of convex or concave elevations or depressions more or less regular. When regular they have smooth concentric ridges, as in many shells; hence the name is derived. The conchoidal fracture is distinguished according to the magnitude of the elevations and depressions, into large conchoidal, as in obsidian or flint, and small conchoidal, as in pitch-stone. It is further distinguished into deep or flat conchoidal, and into perfect conchoidal and imperfect conchoidal. The conchoidal fracture is characteristic of brittle minerals, which have some degree of lustre and transparency. The *uneven fracture* presents elevations which are commonly irregular and angular. This fracture is most frequent in metallic minerals, and in opaque minerals which have some lustre; it passes into small and imperfect conchoidal, and also into earthy.

The *even fracture* is that kind of surface which shews the fewest inequalities, and these inequalities are flat and never sharply defined. It passes into large conchoidal and splintery.

The *splintery fracture*, improperly so called, denotes a nearly flat surface, on which are numerous small wedge-shaped scales, adhering by their thick end.

The *earthy fracture* is peculiar to opaque earthy minerals, as as chalk. The furface has a number of minute elevations and depreffions, which makes it appear rough.

The *hackly fracture* is peculiar to the malleable metals, and confifts of fhort fharp-pointed protruding fibres, which are fometimes only difcoverable by the feel.

Thefe different kinds of fracture often pafs into each other, and occur together: the moft prevalent one muft be taken as the characteriftic fracture. In minerals which have a cryftalline ftructure, the true or proper fracture is that which is acrofs the direction of the planes. When cryftalline minerals are broken, the divifion taking place more readily in the direction of the planes, the fragments have generally a tendency to a regular form, as cubic, rhomboidal, &c. according to the ftructure of the mineral from which they are broken.

Imperfectly cryftalline minerals break into fragments, which are more or lefs regular, and contain the following varieties: the wedge-fhaped, fplintery, fpecular, and tabular.

Indeterminate fragments, from hard and brittle minerals, which poffefs no cryftalline ftructure, have fharp edges and angles. In other minerals, the angles and edges are more or lefs blunt in proportion to their foftnefs and toughnefs.

External form or fhape of minerals is either *indefinite*, *definite*, or *cryftalline*.

The *indefinite* or *amorphous*, called by Mr. Jamefon the common external fhape of a mineral. This character is applied when a mineral exhibits no appearance of regular planes or laminæ, nor any refemblance to well-known natural or artificial bodies. When the mineral forms a thin coat or cruft on other minerals, it is called *fuperficial* or invefting, which is common to friable or pulverulent minerals. Another variety is called plated or membranaceous, where the mineral forms thin membranes or flakes not exceeding in thicknefs common paper. When the three dimenfions are not very different from each other, if the bulk is not confiderable, the mineral is faid to be in pieces, which may be either angular or rounded. If the bulk of an amorphous mineral be confiderable, it is called *maffive*. An enumeration of Werner's common external forms is given under ORYCTOGNOSY; which fee.

The *definite* form, or particular external fhape, appears in many inftances to be derived from cryftallization modified or difturbed by other caufes. According to Mr. Aikin, many of the definite forms have evidently been occafioned by matter in a femi-fluid ftate having been expofed to the fimultaneous action of cryftallization, concentric attraction, and gravitation. To cryftallization is owing the minute ftructure in fhort prifms or fibres laterally aggregated; to the concentric attraction it is owing that each of thefe fibres converges towards a real or imaginary centre, forming a curved thick plate of the whole, or feveral plates in fucceffive coats, like the ftructure of the onion; and laftly, it is owing to gravitation that thefe concretions do not form perfect fpheres, but are more or lefs elongated into the mamillary, the reniform, the botryoidal, and the ftalactitic varieties. Of particular external forms, a great variety are enumerated. (See ORYCTOGNOSY.) The definite form that approaches neareft to the regular cryftalline, is the *arborefcent* or *dendritic*: it bears a near refemblance to a vegetable fpray; hence its name. On minute examination, it will, however, be found to confift of cryftals occafionally very perfect, implanted one into another, and branching in different directions. Certain varieties have obtained particular names, as *reticulated* or reniform, when the branches interfect like the mefhes of a net; and *pectinated*, when a number of fhort branches rife parallel to each other, at nearly equal diftances, on the fame fide or on oppofite fides of a main branch, as in a comb.

The *cryftalline* form of minerals is called by Mr. Jamefon the regular external fhape. When a mineral occurs cryftallized in a fimple form which has received a name in geometry, as the cube, the rhomboid, the octahedron, &c. it is eafy to give an idea of it by referring it to that form: but when a cryftal prefents a great number of unequal planes, or is very complicated, the defcription becomes difficult without a drawing or model. Mr. Werner has, however, confiderably facilitated the mode of defcribing cryftals by confidering them as modifications of certain fimple forms; and this mode, though not ftrictly fcientific, is found moft convenient in practice.

The fimple forms, or what he calls the fundamental forms, are, the *cube* (*fig.* 1.); the *rhomboid* (*fig.* 2.); the *prifm*, which may have three, four, or a greater number of fides (*figs.* 3, 4, 5, &c.); the *pyramid*, which may have three, four, fix, or eight triangular planes (*fig.* 6.); the table, which has two equal and parallel planes, which are very large compared with the thicknefs of the table, and is bounded by an indeterminate number of fides (*figs.* 7 and 8.) The three following forms are very rare. The *icofahedron*, having twenty equilateral planes (*fig.* 9.); the *dodecahedron*, having twelve pentagonal faces (*fig.* 10.); and the *lens*, which has two curved faces (*fig.* 11.)

Mr. Aikin is of opinion, that the number of fimple forms, or models, to which almoft all cryftals can be referred, may be reduced to four. The prifm, the rhomboidal dodecahedron (*fig.* 12.), the regular tetrahedron (*fig.* 13.), and the double pyramid formed by two equal and fimilar pyramids joined together by a common bafe. The pyramid, like the prifm, may have a greater or fmaller number of fides, and the edges of the bafe of each pyramid may be in the fame plane, as in *fig.* 14, or fet on obliquely, as in *fig.* 31.

Thefe forms, or models, it muft be carefully noticed, have no connection with the true primitive forms of cryftals (fee (CRYSTALLOGRAPHY, *Addenda*), but are merely adopted as convenient types for the defcription of cryftals. The changes which thefe forms are fuppofed to undergo by truncation and bevelment may take place either on the edges or folid angles of the cryftal. As the prifm and the cube are the moft common forms of cryftals, we fhall proceed to defcribe them modified by thefe changes. The prifm, as we have before obferved, may have feveral fides, and may be triangular, or rectangular, as in *fig.* 3; oblique, as in *fig.* 4; or polygonal and equiangular, as in *fig.* 5. The fides are technically called the lateral planes, they are parallel to and furrounding an imaginary axis. The bafes at each extremity of the prifm are called the terminal planes. The lateral edges are formed by the junction of two contiguous fides or planes, and the terminal edges are formed by the junction of the lateral planes with the bafe or terminal planes, and the folid angles are formed at the point of junction of the terminal planes with the lateral planes. The cube may alfo be defcribed as a fhort rectangular four-fided prifm. When a folid angle is removed and one plane is formed in its place, as in *Plate* VII. *fig.* 16, the cryftal is faid to be truncated on the angles. When planes are formed on the edges of a cryftal, as in *fig.* 17, it is defcribed as truncated on the edges: and when two planes are formed on an edge of the cryftal, as in *fig.* 18, it is faid to be bevelled on the edges. *Fig.* 19. is a three-fided prifm bevelled on its lateral edges. When the folid angles of a cryftal, or the terminal planes, appear cut off by three or more planes converging to a point, the cryftal is faid to be acuminated: in *fig.* 20. each angle of the cube is acuminated by three fmall planes fet on the lateral planes; and in *fig.* 21. each angle is acuminated by planes fet on the lateral edges. *Fig.* 22, according to to the Wernerian method, is a four-fided prifm, acuminated at each extremity by four planes fet on the lateral planes. *Fig.* 23. is a four-fided prifm acuminated by four planes fet on the lateral edges. In the fecond inftance, the acuminating planes are rhomboidal; in the firft inftance, triangular. *Fig.* 24. is the equiangular fix-fided prifm, acuminated at each extremity by fix planes fet on the lateral planes. *Fig.* 25. is a fimilar prifm acuminated by three planes at each extremity fet on the alternate lateral planes: and *fig.* 26. is alfo a fimilar fix-fided prifm acuminated by three planes at each extremity, fet on the alternate lateral edges. The planes at the oppofite extremities in *figs.* 25 and 26. are fet in different planes or edges, and are what the Germans call *unconformable*.

The octahedron, or double four-fided pyramid (*fig.* 27.), is a common form of cryftals: it is frequently truncated or bevelled. *Fig.* 28. reprefents the octahedron bevelled at each of the angles. *Fig.* 29. is a double eight-fided pyramid acuminated by four planes at each extremity, fet on the alternate lateral edges of the pyramid, thus forming a cryftal with twenty-four faces, a form common in the leucite. The table may be bevelled on the furrounding edges, as in *fig.* 30; but in this figure, the Wernerian mineralogifts call the furrounding fides the terminal planes, and the larger fides the lateral planes, a deviation for which there does not appear any fufficient reafon, and which is liable to introduce confufion into the defcription of cryftals. Some of the forms here referred to, particularly *figs.* 22 and 24, may be more fimply defcribed as four-fided and fix-fided prifms, terminated at each extremity by four-fided or fix-fided pyramids. The edges of a cryftal may fometimes be doubly bevelled, or may be bevelled, and the edge of the bevelment truncated. Such modifications are better defcribed as replacements of the edges by three, four, or more fmall planes or fecondary faces. A very long prifm is called a capillary cryftal, if the diameter be too fmall to render the faces diftinct. A very fhort prifm, in which the length is very fmall in proportion to the thicknefs, may be regarded as a tabular cryftal. Moft cryftals may be very intelligibly defcribed by affuming the fundamental forms of Werner varioufly modified. We are not, however, to fuppofe, that Werner himfelf intended to convey the idea that nature firft made cryftals complete, and then cut away the angles and edges; he only expreffes, by the terms truncation and bevelment, the appearance the cryftal prefents to the eye. The primitive forms, or the true fundamental forms of cryftals, as given by Haüy, are enumerated under the article CRYSTAL; but *Plate* VII. *Cryftallization*, comprifes thofe forms, and alfo thofe of the integrant molecule. The primitive forms are, the parallelopiped, including the cube and rhomb (*figs.* 1 and 2.), and the rectangular-table (*figs.* 7 and 8.), the octahedron (*fig.* 27.), the tetrahedron (*fig.* 13.), the hexagonal prifm (*fig.* 5.), the rhomboidal dodecahedron (*fig.* 12.), and the dodecahedron with triangular faces (*fig.* 14.) The integrant molecules are, the tetrahedron (*fig.* 13.), the three-fided prifm, and the cube (*fig.* 1.)

In nature, we rarely find cryftals entirely perfect and fymmetrical. If, fays Mr. Aikin, the ftudent fhould imagine that the real cryftals of minerals, fuch as nature prefents them, are formed with the precifion that characterifes the models of the cryftallographer, he will in general find himfelf much miftaken. By far the greater number of cryftals are either imbedded in other fubftances, from which it is difficult to difengage them without much injury, or inhere by one extremity in amorphous or uncryftallized matter of the fame nature with themfelves. Hence it is, that few prifms occur both terminations of which are entire. Not unfrequently alfo cryftals, by being formed in narrow clefts, are compreffed, or in other ways varioufly mutilated, and thus perplex even the moft fkilful mineralogift. Their minutenefs too, when the parts are much complicated, is frequently fuch as to elude the keeneft eye and the moft adroit ufe of the goniometer.

It is often by no means eafy to diftinguifh genuine from *fpurious cryftals*. The latter are generally fuppofed to have been formed in cavities occafioned by the decompofition of real cryftals. Thefe are called cafts. Spurious or fuppofititious cryftals are either cafts or incruftations; the latter occurs when a mineral is depofited over a pre-exifting cryftal and affumes its figure. The cryftal either remains forming a nucleus, or it difappears, and the fuppofititious cryftal is hollow.

In the Wernerian oryctognofy, the magnitude of cryftals and their mode of aggregation are minutely enumerated. (See ORYCTOGNOSY.) In the laft edition of Mr. Jamefon's external characters, he defines the *fcopiform* or *fafcicular* aggregation as "compofed of a number of thin prifmatic cryftals, diverging from their point of attachment, and forming a kind of fafciculus or bundle; example, zeolite." The manipular, or fheaf-like, confifts of a number of cryftals that diverge towards both ends and are narrower in the middle, thus refembling a fheaf; examples, zeolite and prehnite.

Scalar-wife is when many cubical cryftals are arranged like the fteps of a ftair; example, cubes of corneous filver-ore.

The furface of cryftals is either fmooth or ftreaked, the ftreaks fometimes crofs longitudinally and fometimes tranfverfely. Thefe ftreaks are deferving of notice, as they frequently ferve to indicate the ftructure of cryftals. See CRYSTALLOGRAPHY, *Addenda*.

Electricity is a character peculiar to a fmall number of cryftallized minerals, that exhibit the pofitive and negative electricity at their extremities on being heated. This property was firft difcovered in the tourmaline. (See TOURMALINE.) The points which exhibit electricity are called the electric poles. In order to diftinguifh thefe poles from each other, the following fimple apparatus is employed. (See CRYSTALLOGRAPHY, *Plate* IV. *fig.* 92. A.) It confifts of a needle of copper or filver, having at each end two fmall balls *a*, *b*; this needle, like the common compafs-needle, is moveable upon a pivot, having a very fine point, and at the bottom a ftand or foot. The needle and ftem are infulated by placing the foot on a plate of wax or refin. To ufe the apparatus, we place one finger on the ftem, and prefent near to the needle a ftick of fealing-wax, made electrical by rubbing, then withdraw the finger, and afterwards the ftick of fealing-wax, and the needle will be pofitively electrified; and when a cryftal electrified by heat, and held by a pair of fmall pincers in an infulated handle, as at B, is brought fo that the pofitive or negative pole may approach one of the balls *a*, *a*, *b*, it will be attracted or repelled. The electricity of the needle will be perceived a quarter of an hour, or longer, and may be rendered more or lefs ftrong by varying the diftance at which the ftick of fealing-wax is held. It may be proper to obferve that many minerals become electric by friction.

Magnetifm is a character which occurs principally in ores of iron, or in minerals that contain a portion of iron, or iron in a ftate of black oxyd.

The above are the moft important phyfical characters, comprifing thofe which are called the external characters by Werner, and thofe to which he reftricts the term phyfical.

Specific Gravity, or weight, is one of the moft important

portant characters of minerals, and is obtained accurately by weighing them in the hydrostatic balance. (See HYDROSTATICS.) For most practical purposes, a pair of common gold scales that will turn freely with the tenth part of a grain is sufficiently accurate. The mineral may first be weighed, and the weight be noted, and then it must be suspended by a fine thread, and weighed again in rain or river water, about the temperature of 60°. The original weight of the mineral divided by the difference of the weight will give its specific gravity, or the weight compared with that of water. The heaviest bodies are the metallic, and the metallic ores, which range from about five times the weight of water to seventeen; the latter is the specific gravity of native platina. The heaviest earthy minerals are the barytic and strontitic earths, and the gems; these range from 3.5 to 4.5. The other solid earthy minerals range from 2. to 3.5, and some few solid minerals are lighter than water, as rock-cork.

The *feel*, whether unctuous, or smooth or dry, meagre or harsh, is a character which serves to distinguish particular minerals. The odour and taste are also characters of particular minerals; some yielding a peculiar odour naturally, as petroleum, or when rubbed, as swine-stone; and others, as the saline, affect the taste. Adhesion to the tongue is also a character possessed by minerals which absorb water. The coldness and sound of minerals are also given as characters by Werner, but they are of little practical value.

Friable minerals are either loose, as when the particles have no perceptible coherence, or are slightly cohering. The particles are in some instances scarcely discernible, and are called dusty particles, as in cobalt crust; in other instances, the particles are large and scaly.

The fluid minerals are few in number, and are characterised by their fluidity, transparency, and lustre.

The remaining characters are purely chemical, except the action of water, and of the atmosphere, which is in some instances chemical, and in others mechanical. Water unites with many of the clays, and renders them plastic; other minerals, as fullers'-earth, fall to pieces in water, without being dissolved, or even rendered plastic. In some cases, minerals absorb water, which alters their transparency and colour. Saline minerals chemically combine with water, and are dissolved. To the absorption of water, is owing the property of adhering, when applied to the tongue before noticed. The action of the atmosphere on minerals is principally effected either by the abstraction or absorption of moisture, and the oxydation of minerals when exposed to the air is for the most part owing to the moisture which it contains.

The chemical characters of minerals are those which the mineralogist can ascertain by the action of acids, or of heat as applied by the blow-pipe, either simply or aided by re-agents. The action of acids is of great use in ascertaining many essential characters of minerals. For this purpose, the muriatic or the nitric acids of moderate strength are most convenient. A minute fragment of the mineral may be placed in a watch-glass, and a few drops of acid poured upon it. The native carbonates effervesce, and are dissolved. Some minerals require to be reduced to a state of powder to shew the action of acids, and are hereby reduced to the form of jelly in a few hours, as zeolite. Other minerals only require to be touched with a glass rod dipped in acid to ascertain their nature.

The blow-pipe is an instrument of very great use to the mineralogist; it has been already described. (See BLOW-PIPE.) A blow-pipe which can be carried in the pocket, to be worked when required by the mouth, is by far the most convenient; but it requires some precautions in the management to render it efficient. The best and clearest directions for this purpose which we have seen are those given by Mr. Aikin.

"Few persons," he says, "are able at first to produce a continued stream of air through the blow-pipe, and the attempt often occasions a good deal of fatigue. I shall make no apology, therefore, for treating this matter somewhat in detail. The first thing to be done is to acquire the habit of breathing easily and without fatigue through the nostrils alone; then to do the same while the mouth is filled and the cheeks inflated with air, the tongue being at the same time slightly raised to the roof of the mouth, in order to obstruct the communication between the mouth and the throat. When this has been acquired, the blow-pipe may be put into the mouth, and the confined air expelled through the pipe by means of the muscles of the cheeks. As soon as the air is nearly exhausted, the expiration from the lungs, instead of being made through the nostrils, is to be forced into the cavity of the mouth; the communication is then instantly to be shut again by the tongue, and the remainder of the expiration is to be expelled through the nostrils. The second, and all subsequent supplies of air to the blow-pipe, are to be introduced in the same manner as the first. Thus, with a little practice, the power may be obtained of keeping up a continued blast for a quarter of an hour, or longer, without inconvenience.

"Much depends on the size of the external aperture of the blow-pipe. If so large that the mouth requires very frequent replenishing, the flame will be wavering, and the operator will soon be out of breath; if, on the other hand, the aperture be too small, the muscles of the cheeks must be strongly contracted, in order to produce a sufficient current, and pain and great fatigue of the part will soon be the consequence. An aperture about the size of the smallest pin-hole will generally be found the most convenient, though for particular purposes one somewhat larger or a little smaller may be required.

"Several varieties of form have been recommended for the blow-pipe: they all have their advantages and disadvantages. Upon the whole, it appears desirable that there should be an expansion of the tube somewhere between the two extremities, both for the sake of collecting and retaining the condensed moisture of the breath, and for producing a regulated pressure, and therefore a regular blast. The nosle also should be tipped with a moveable piece for the convenience of giving at least three different sizes of aperture. These conditions being obtained, other circumstances are of small importance, provided neither the bulk nor weight of the instrument be troublesome.

"The fuel for this little reverberatory furnace (as the blow-pipe apparatus may, without impropriety, be denominated) is oil, tallow, or wax, kept in combustion by means of a wick. The oil is the worst, the tallow is better, and the wax is best, not only as being cleaner, and free from any offensive smell, but also as affording a greater heat. The management of the wick too is a matter of some nicety. It should neither be too high nor snuffed too low, and should be a little bent at its summit *from* the blast of the pipe. All casual currents and drafts of wind ought to be carefully avoided, as rendering the flame unsteady, and very materially impairing its strength. The above conditions being duly complied with, the flame, while acted on by the pipe, will evidently consist of two parts, an outer and inner; the latter will be of a light-blue colour, converging to a point at the distance of about an inch from the nosle; the former will be of a yellowish-white colour, and will converge less lefs perfectly. The moft intenfe heat is juft at the point of the blue flame. The white flame confifts of matter in a ftate of full combuftion, and calcines or oxygenates fubftances immerfed in it; the blue flame confifts of matter in a ftate of imperfect combuftion, and therefore partly deoxygenates metallic oxyds which are placed in contact with it.

"The fupports of the various fubftances while undergoing the action of the blow-pipe come next to be confidered. Of fupports there are two kinds, combuftible and incombuftible. The combuftible fupport (ufed chiefly for metallic ores) is charcoal. The clofeft-grained and foundeft pieces are to be felected for this purpofe; and even the beft often fplit and become rifty after being ufed for a fhort time. This will not unfrequently happen in the middle of an experiment, when the melted globule finks into the cracks, is loft, and the experiment muft be begun again. Inftead of fticks of charcoal, fome perfons recommend that the charcoal, after being finely pulverifed, fhould be moiftened with a folution of gum tragacanth, and moulded into a convenient form; a plan that well deferves to be fairly tried. Perhaps fimply moiftening the charcoal-powder, and then fubmitting it to the action of a very ftrong fcrew-prefs, might be ftill better. The incombuftible fupports are, metal, glafs, and earth, in the ufe of all which one general caution may be given,—to make them as little bulky as poffible. The fupport always abftracts more or lefs of the heat, and in many cafes, efpecially when metallic fpoons are employed, entirely prevents the flame from producing its due effect. The beft metallic fupport is platina, becaufe it is infufible, and tranfmits heat to a lefs diftance and more flowly than other metals. A pair of flender forceps of brafs, pointed with platina, is the beft poffible fupport for non-metallic minerals that are not very fufible. For the fufible earthy minerals, and for the infufible ones when fluxes are ufed, leaf-platina will be found the moft convenient; it may be folded like paper into any defirable form, and the refult of the experiment may be obtained fimply by unfolding the leaf in which it was wrapped up. Glafs fupports are flender tubes or rods of this fubftance. If the mineral to be examined is of a longifh or fibrous fhape, one end may be cemented to the top of the glafs rod by heating it, and in this ftate it may be further examined with great convenience. Earthen fupports are ufed only for extemporaneous cupellation; they are beft made of bone afh, and muft of neceffity be of a certain bulk, in order to abforb the litharge, and other impurities, which it is the object of this procefs to feparate from the *fine metal.* With regard to the magnitude of the fpecimens required for examination, no very precife rule can be given; the moft fufible, fuch as fome of the metallic ores, may be as large as a fmall pea, while the more refractory of the earthy minerals fhould fcarcely exceed the bulk of a pin's head.

"The heat that is firft applied to inveftigate the properties of mineral fubftances fhould be very flow, not exceeding that which exifts on the outfide, even of the yellow flame; at this temperature, the phofphorefcence is beft elicited, and decrepitation for the moft part takes place, the fufible inflammables begin to melt, and the metallic and moft other mineral falts lofe their water of cryftallization. The yellow flame will raife a fubftance to a tolerably full red heat, by which the following effects are produced. Many changes of colour take place, all the yellow ores of iron become red, and the peach-bloffom tinge of flowers of cobalt becomes blue; certain earthy minerals lofe their water of cryftallization or of compofition, and exfoliate, as gypfum, or throw up coarfe and irregular ramifications, as prehnite and mefotype. At this temperature, alfo, carbonate of ftrontian begins to tinge the flame with its peculiar crimfon colour, and muriate of copper with its bright green colour. The roafting of all the metallic ores is beft carried on at this heat; fulphur and arfenic are drawn off, and exhibit their characteriftic odours; grey antimony melts; native bifmuth runs out from the matrix, through which it is diffeminated; and pearlfpar and fpathofe iron blacken and become magnetic. In the ftill higher degree of heat produced at the point of the interior blue flame, although fome minerals ftill continue perfectly refractory, and undergo but little change of any kind, yet the greater part is very fenfibly altered. Some, as pearl-ftone, enlarge very confiderably in bulk at the firft impreffion of the heat, but are with difficulty afterwards brought to a ftate of fufion. Others become covered with a fuperficial glazing, and the fharp edges and angles become gloffy and rounded off. Others, confifting really, though not vifibly, of an intermixture of two fubftances differing in fufibility, undergo the procefs of *fritting*, in which refractory grains are difperfed through a vitreous mafs. In others, a complete fufion takes place, and produces a fpongy opaque femivitreous mafs called a flag, or an opaque glafs called an enamel, or a more or lefs tranfparent or true glafs, which latter may vary in texture from compact to porous and fpongy or intumefcent.

"In examining the habitudes of the earthy minerals with the blow-pipe, no fluxes are required; whereas to moft of the metallic ores, fluxes will be found at almoft all times a very ufeful and often a neceffary addition. The ores of the difficultly reducible metals, fuch as manganefe, cobalt, chrome, and titanium, are characterifed by the colour which their oxyds give to glafs; in all thefe cafes, therefore, vitreous fluxes muft be largely made ufe of, both to diffolve the earthy matter with which the oxyds are generally mixed very intimately, and to furnifh a body with little or no colour of its own, which may receive and fufficiently dilute the inherent colour of the oxyd. I fay *fufficiently* dilute, becaufe the colour of moft oxyds is exceffively intenfe, and moft perfons in their firft experiments of this kind, are very apt to obtain ambiguous refults in confequence of ufing fo large a proportion of oxyd, that the glafs, whether blue, red, or green, appears quite black. With regard to fluxes, the following will, I believe, be found amply fufficient. Where the object is not only to diffolve the oxyd, but at the fame time to retain it at a high ftate of oxydation, the flux employed fhould be either nitre or a mixture of this with a glafs of borax, or, ftill better, nitrous borax formed by diffolving common borax in hot water, neutralizing its excefs of alkali by nitric acid, then evaporating the whole to drynefs, and laftly haftily melting it in a platina crucible. For an active, and at the fame time non-alkaline flux, boracic acid may be ufed, or neutral borate of foda; and where a flight excefs of alkali is required, or at leaft does no harm, common borax by itfelf, or mixed with a little cream of tartar, when a ftrong reducing flux is wanted, may be had recourfe to. For coloured glaffes, the proper fupport is leaf-platina; but for reductions, charcoal. In the latter cafe, the ore previoufly roafted, if it contain either fulphur or arfenic, is to be pulverifed and accurately mixed with the flux; a drop of water being then added to make it cohere, it is to be formed into a ball, and depofited in a fhallow hole in the charcoal, being alfo covered by a piece of charcoal, if a high degree of heat is wanted. The eafily reducible metals, however, may be treated with lefs ceremony; a bit of the ore being placed on the charcoal, and covered with glafs of borax, will, in the fpace of a few feconds, be melted by the blow-pipe, and converted

converted into a metallic globule, imbedded in a vitreous ſcoria.

"In all caſes where a metallic globule is obtained, it ſhould be ſeparated from the adhering ſcoria, and examined as to its malleability and other external characters; being then placed a ſecond time on the charcoal, but without flux, it is to be brought to a ſtate of gentle ebullition, during which the ſurface being oxygenated, will exhale a heavy vapour that condenſes on the blow-pipe, or falls down on the charcoal in form of a powder, or of ſpicular cryſtals, from the colour and other characters of which the nature of the metal may probably be aſcertained. If any ſuſpicion is entertained of a portion of ſilver or of gold being mixed with the oxydable metal, the button muſt be placed on an earthen ſupport, and there brought to a full melting heat; by degrees the oxydable metal will become ſcorified, and will entirely ſink into the ſupport, leaving on the ſurface a bright bead of *fine metal*, if ſuch was contained in the alloy; but the proportion of this laſt being generally very ſmall, and the entire maſs of the alloy often not exceeding a large ſhot, it is not unfrequently neceſſary to have recourſe to the magnifying glaſs, to be fully convinced of the preſence or abſence of fine metal." Aikin's Manual of Mineralogy.

The above directions will be found of the greateſt uſe, and are ſufficiently ample to make any additional remarks unneceſſary. Some German mineralogiſts have, indeed, arranged under nearly one hundred heads, the different changes produced on minerals by the action of the blow-pipe, and have given elaborate explanations of words known with ſufficient accuracy by almoſt every child of ſeven years of age. This we regard not as ſmoothing the paths of ſcience, but as blocking them up with rubbiſh to impede the progreſs of the ſtudent.

In the mineralogy of Haüy, he has introduced very judiciouſly what he denominates the *diſtinctive characters* of minerals, noting the particular characters which ſerve to diſtinguiſh one mineral ſpecies from another, to which it has the greateſt general reſemblance.

New ſpecies of minerals have been diſcovered almoſt every year ſince the commencement of the preſent century, the greateſt number of theſe diſcoveries have been made in the mines of Sweden. Few, however, of the newly diſcovered minerals poſſeſs properties that entitle them to much notice, and it is highly probable, that as the ſcience of mineralogy advances to perfection, many of theſe ſuppoſed new ſpecies will be diſcovered to be only varieties of ſpecies that have been long known.

ACTINOLITE, or *Actynolite*. Fr. *actinote*. See STRAHLSTEIN.

ACTINOTE, *Amphibole*. See STRAHLSTEIN.

ADAMANTINE *Spar*, or *Common Corundum*; *Corindon harmophane*, Haüy. See ADAMANTINE *Spar*.

ADHESIVE *Slate*, a ſpecies of poliſhing ſlate, or *polier ſchiſte*. See POLISHING *Slate*, *Addenda*.

ADULARIA. (See FELSPAR, *Addenda*.) This variety of felſpar was formerly confounded with glaſſy felſpar. (See GLASSY *Felſpar*, *Addenda*.) Adularia occurs in veins of granite in Bamfshire, in the Iſle of Arran, and other parts of Scotland. Rolled pieces of adularia having a moſt beautiful pearly light are found in the iſland of Ceylon.

AGALMATOLITE, or *Figure-Stone*; *Beldſtein*, Werner; *Talc graphique*, Haüy. A mineral which may be regarded as an indurated ſteatite, or rather, according to Jameſon, as intermediate between ſteatite and nephrite or jade. It occurs maſſive; the fracture is ſplintery, or imperfectly ſlaty; the colours are greeniſh-grey, apple-green, or yellowiſh-brown, and ſometimes fleſh-red and roſe-red. It is tranſlucent, unctuous to the touch, and yields with eaſe to the knife, owing to which property it is carved with facility into different figures by the Chineſe, and into pagodas, cups, and ſnuff-boxes. The ſpecific gravity is from 2.6 to 2.8. According to Klaproth, the conſtituent parts of agalmatolite are,

	from China.	from Nagyag.
Silex	54	55
Alumine	34	33
Lime	—	—
Potaſh	6.25	7
Iron	0.75	0.50
Water	4	3
	99	98.50

According to Aikin, this mineral occurs at Glyder Bach, Caernarvonſhire.

AGARIC *Mineral*, or *Rock Milk*; *Chaux carbonatée ſpongieux*, Haüy. See AGARIC *Mineral*.

AGATE. (See AGATE.) The agate is not a ſimple mineral, but is compoſed of various ſiliceous ſubſtances arranged in concentric lamellæ, exhibiting, when cut and poliſhed, zones and angular lines, like fortifications. There is alſo a kind of agate-breccia, in which angular fragments are cemented by quartz or chalcedony. Agates appear to be formed by ſiliceous infiltration in the cavities of baſaltic rocks, the formation commencing from the ſurface, and the cavity gradually filling by ſucceſſive depoſitions on the ſides, until the whole forms one ſolid nodule. According to the direction of the lines or the ſtructure of agates, they are denominated *ribbon or ſtriped agate*, *fortification agate*, *landſcape agate*, *brecciated agate*, *tabular agate*, *jaſper agate*, *ſpotted agate*, *blended agate*, *ſtar agate*, marked with radiated ſpots; *petriſaction agate*, foſſil-ſhells and zoophytes are ſometimes penetrated or filled with agate. In the variety called *moſs agate*, nodules of chalcedony incloſe minute arborizations reſembling moſs, ſome of which are ſuppoſed by mineralogiſts to be branches of moſs ſuddenly incloſed and preſerved in ſiliceous matter.

ALABASTER, *Calcareous*, or *Calc ſinter Alabaſter*, *Gypſeous Alabaſter*. See ALABASTER and GYPSUM.

ALALITE, *Diopſide*, and *Muſſite*, a mineral allied to augit; firſt found in the Alp of La Muſſa, near the town of Ala, from whence the names alalite and muſſite are derived. See DIOPSIDE, *Addenda*.

ALLANITE, *Cerium allanite*, Fr. an ore of the newly-diſcovered metal cerium, firſt analyſed by Mr. Allan, and hence called allanite. Its colour is a browniſh-black; it occurs diſſeminated and cryſtallized in rhomboidal priſms, the angles of which meaſure 117° and 63°. The internal luſtre is ſhining, and reſino-metallic. It is opaque, and yields a greeniſh-grey ſtreak. It ſcratches glaſs, is brittle and eaſily frangible. Before the blow-pipe it froths, and melts into a brown ſlag. It gelatinizes in nitric acid. The ſpecific gravity is from 3.5 to 4. The conſtituent parts are,

Oxyd of cerium	33.9
Oxyd of iron	25.4
Silex	35.4
Lime	9.2
Alumine	4.1
Moiſture	4
	112

It occurs in granite in Weſt Greenland.

ALLOCHROITE,

Allochroite, *idem*, Haüy; *ſplintery garnet* of Karſten. It is claſſed with the garnet family by Werner, but is regarded as a diſtinct ſpecies. It occurs maſſive; the fracture is uneven, paſſing into conchoidal. Its colours are greeniſh and yellowiſh-grey: it is tranſlucent on the edges; internally it has a gliſtening reſinous luſtre. It gives ſparks with ſteel. The ſpecific gravity is 3.5. It has hitherto been found only in an iron-mine at Dramman, in Norway. It is leſs hard and lighter than common garnet. According to Vauquelin, the conſtituent parts are,

Silex - - - -	35
Alumine - - -	8
Lime - - - -	30.5
Oxyd of iron - - -	17
Carbonate of lime - -	6
Oxyd of mangaueſe - -	3.5
	100

Almandine, regarded as a variety of garnet. See Almandin; but for granite *r.* garnet.

Alum-Earth, *Alum-Slate, Common and Gloſſy, Alum-Stone.* See Alum, *Ores of.*

Aluminite, *Subſulphate of Alumine; Reine thonerde*, Werner; *Alumine pure*, Haüy. This mineral is of a ſnow-white colour, verging on yellowiſh-white. It occurs in reniform pieces, it has no luſtre, the fracture is earthy, and the conſiſtence between friable and ſolid. It is opaque, foils ſlightly, affords a gliſtening ſtreak, and adheres feebly to the tongue. It feels fine, but meagre. The ſpecific gravity is 1.66. A variety of the ſame mineral ſubſtance occurs at Newhaven in Suſſex, filling up fiſſures in chalk. This variety is white, yields to the nail, and adheres ſtrongly to the tongue. The conſtituent parts of the foreign aluminite are,

Alumine - - -	32
Water - - -	47
Sulphuric acid - -	19.25
With a trace of ſilex, lime, and iron, equal in ſome ſpecimens to -	1.25
	99.5

Amalgam, *Native*, ſemifluid and ſolid. See Mercury, *Ores of.*

Amanthoide, *Capillary*, and *Amanthoide, Byſſolite;* the latter ſo called by Sauſſure. The former appears to be a variety of amianthus; the latter reſembles it, but differs from it in chemical compoſition, if the analyſis of Sauſſure be correct. It is ſuppoſed to be hornblende in a capillary form. Haüy.

Amazon-Stone, green felſpar from South America, which is cut and poliſhed, and ſold under that name, becauſe it is found in rolled pieces on the banks of the river of the Amazons.

Amber, *White* and *Yellow.* The white amber is of a ſtraw-yellow or yellowiſh-white colour. It occurs maſſive, and ſometimes incloſed in the yellow amber; it is leſs tranſparent than yellow amber. See Amber.

Amethyst, a variety of cryſtallized quartz. (See Quartz, and Amethyst.) Werner divides amethyſts into two ſub-ſpecies, common and fibrous. The prevailing colour of the amethyſt is violet-blue of different degrees of intenſity; but it is ſometimes plum-blue and browniſh-black; alſo grey, olive-green, and piſtachio-green, which laſt colour is very rare. In maſſive varieties of amethyſt, ſeveral colours occur together. In cryſtallization and other properties, the amethyſt does not differ from quartz. It contains 97.50 of ſilex, with a minute trace of alumine, oxyd of iron, and mangaueſe; to theſe oxyds, no doubt, its colours are owing. Amethyſts occur in agate balls in baſaltic rocks. Thick fibrous amethyſt occurs maſſive and in rolled pieces; it occurs in agate veins, in the ſame rocks as common amethyſt. A red colour is given to amethyſts by the jewellers, by incloſing them in charcoal, which is ignited, and allowed to conſume gradually. When the colour is not uniformly diffuſed, it is expoſed in a mixture of ſand and iron to a moderate heat, by which it is rendered more uniform.

Amianthus, *Flexible aſbeſtus; Amiant*, Werner; *Aſbeſte amianthe*, Fr. (See Amianthus, and Asbestus.) It is found in ſerpentine in the Iſle of Angleſea, and in the ſame rock at Portſoy in Scotland.

Ampelite is a bituminous ſlate, or ſhale, of which drawing-ſlate, alum-ſlate, and ſlate-clay, are varieties. See Slate.

Amphibole, hornblende. See Hornblende, *Addenda.*

Amphibole *Lamellaire*, common hornblende.

Amphibole *Cryſtallizée*, baſaltic hornblende.

Amphibole *Actinote.* See Strahlstein.

Amphibole *Fibreux*, glaſſy actinolite. See Strahlstein.

Amphibole *Aciculaire*, aſbeſtous actinolite. See Strahlstein.

Amphibole *Blanc et Scyeux*, aſbeſtous tremolite, grammatite. See Tremolite.

Amphibole *Grammatite*, common tremolite and glaſſy tremolite.

Amphigene. See Leucite.

Analcime. See Zeolite.

Anatase, or *Octahædrite, Titane anatare*, Haüy. See Titanium.

Andalusite, *Feldſpath aphyre*, Haüy, is of a fleſh-red colour, ſometimes inclining to pearl grey; it occurs maſſive or cryſtallized in rectangular four-ſided priſms, with the terminal edges and angles ſometimes truncated. The ſtructure is imperfectly lamellar, with a double rectangular cleavage, parallel with the lateral planes of the priſm. It is tranſlucent; it ſcratches quartz with eaſe, but is rather eaſily frangible. The ſpecific gravity is 3.16. Before the blow-pipe it becomes white, but is infuſible. According to Vauquelin, the conſtituent parts are,

Silex - - - - -	32
Alumine - - - -	52
Potaſh - - - -	8
Oxyd of iron - - -	2
	94

It occurs in veins in granite, gneiſs, and mica-ſlate, along with felſpar, quartz, mica, and ſchorl. It was firſt found in the province of Andaluſia. It has ſince been found in Aberdeenſhire. The cryſtals are generally middle-ſized or ſmall, and occur imbedded. It is diſtinguiſhed from felſpar by its greater hardneſs, weight, and infuſibility; and from corundum by its double rectangular cleavage, and its inferior ſpecific gravity.

Anhydrite, or *Anhydrous Gypſum*, a ſpecies of gypſum which contains ſcarcely a trace of water in its compoſition, and is much harder than common gypſum; the latter (ſee (fee Gypsum) contains 22 *per cent.* of water, and fome varieties 38 *per cent.* There are five varieties of anhydrite: *compact, fibrous, radiated, fparry*, and *fcaly*.

Compact Anhydrite.—Its colours are various fhades of white, inclining to fmall blue, blueifh-grey, and is alfo red and brownifh-red. It occurs maffive, contorted, and reniform. The contorted variety, from its refemblances to the convolutions of the inteftines, was called tripe-ftone, or *pierre de tripes*. Compact anhydrite is more or lefs tranflucent, is feebly glimmering, has a fmall fplintery fracture, paffing into even or conchoidal. The fragments are fharp-edged: it is difficultly frangible. Specific gravity from 2.8 to 2.9. According to Klaproth, the conftituent parts are,

Lime - - - - -	41.48
Sulphuric acid - -	56.28
Water - - - - -	.75
	98.51

Fibrous Anhydrite is of a red colour: it occurs maffive, and has a delicately fine and parallel fibrous ftructure. *Radiated anhydrite* has a blue or greyifh colour, and is fometimes fpotted with red: it occurs maffive. The ftructure is radiated, the furface fplendent and pearly: it is tranflucent and rather hard. Its fpecific gravity and conftituent parts are the fame as the former variety.

Sparry Anhydrite, or Cube-Spar; Chaux fulphatée laminaire, Haüy.—The prevailing colour is white, inclining to blue-grey, pale yellow, and red. It is more or lefs tranfparent, the luftre fplendent and pearly: it refracts doubly. It is cryftallized in rectangular four-fided prifms, and in fix or eight fided prifms. It alfo occurs maffive. It has a foliated ftructure, with a cleavage parallel with the fides of a rectangular prifm, which is its primitive form. It fcratches calcareous fpar, but is eafily frangible. The fpecific gravity is 2.9. Before the blow-pipe, it becomes glazed over with a white friable enamel, but does not melt and exfoliate like gypfum. It is met with in the falt-mines in the Tyrol, and in Switzerland, and alfo in the gypfum of Nottinghamfhire. Scaly anhydrite is generally white, inclining to blue or grey: it occurs maffive, has a confufed foliated ftructure, and a fplendent and pearly luftre. It is tranflucent on the edges, is eafily frangible, and is foft. Specific gravity 2.9. According to Klaproth, the conftituent parts are,

Lime - - - - -	41.75
Sulphuric acid - -	55.
Muriate of foda - -	1.
	97.75

It occurs in the falt-mines of Hall in the Tyrol.

Anthophyllite. Its colour is between dark yellowifh-grey and olive-brown: it occurs maffive and cryftallized in reed-fhaped cryftals, which appear to be four-fided prifms longitudinally ftreaked. The luftre is fhining and pearly, approaching to metallic. The ftructure is radiated. It has a two-fold cleavage parallel with the fides of a rectangular prifm. It is more or lefs tranflucent, yields to the knife, but fcratches glafs with difficulty. It is infufible before the blow-pipe. Its fpecific gravity is 3.2. The conftituent parts are,

Silex - - - - -	56.00
Alumine - - -	13.30
Magnefia - - -	14.00
Lime - - - - -	3.33
Oxyd of manganefe -	3.
Iron - - - - -	6.
Water - - - - -	1.43
	97.06

This mineral is allied to hornblende: it occurs at Konigfberg in Norway.

Anthracite, or *Anthracolite*, flaty glance-coal and columnar glance-coal. Anthracite is that fpecies of coal which has a fhining luftre approaching to metallic, and burns without fmoke. *Kilkenny coal* and *Welfh culm* are varieties of anthracite. See Coal.

Antimony, *Native*, and *Ores of.* See Antimony-*Ores*, and Red *Antimony*, *Addenda*.

Apatite. (See Apatit.) *Chaux phofphatée*, Haüy. Werner makes two fub-fpecies of apatite, the common and conchoidal. The latter, or *conchoidal apatite*, has a conchoidal fracture: it has been called *afparagus ftone*. Apatite has been difcovered in Cornwall, and recently near Bovey in Devonfhire. Maffive apatite and earthy apatite have received from Werner the names of common phofphorite and earthy phofphorite. Phofphorite has nearly the fame conftituent parts as apatite, with an addition of a fmall portion of fluoric acid, about 2.50 *per cent.*

Aphrite. (See Schaum-*Earth.*) Aphrite is divided into *fcaly aphrite*, *flaty aphrite*, and *fparry aphrite*.

Aplome, a mineral clofely allied to garnet, but is fuppofed to have a different primitive form of the cryftal or that of a cube. (See Garnet.) Aplome is confidered by Jamefon as cryftallized common garnet.

Apophylite. See Zeolite.

Aqua, *Marine*. See Beryl.

Arendalite. See Epidote, *Addenda*.

Arktizite, a name given by Werner to the mineral fince called Wernerite. See Wernerite.

Arragonite. (See Arragonite.) Since that article was written, the remarkable anomaly in the cryftallization of this mineral has been partly explained by the difcovery that it contains a portion of the carbonate of ftrontian, which is fuppofed to give a different form to its primitive cryftal. The conftituent parts, as given by Stromeyer, are,

Arragonite from Molina, in Arragon.

Carbonate of lime - -	94.57
Carbonate of ftrontian -	3.96
Hydrate of iron - -	.70
Water - - - - -	.30
	99.53

From Baftanes.

Carbonate of lime - -	94.82
Carbonate of ftrontian -	4.08
Manganefe and a trace of iron	.09
Water - - - - -	.98
	99.97

Werner divides arragonite into common, columnar, and acicular. Arragonite occurs in trap rocks in various parts of Scotland, and we have acicular cryftals of arragonite in lava from Vefuvius.

Arseniate *of Copper*. See Copper-Ores.

Arseniate *of Iron*. See Iron-Ore, fection *Cube-Ore*.

Arseniate *of Lead*. See Lead, *Ores of*.

Arsenic, *Native*. See Arsenic, *Ores of*.

Arsenic *Bloom*. See Pharmacolite, *Addenda*.

Arsenic *Oxyd*, and *Arfenical Pyrites*, or *Marcafite*. See Arsenic, *Ores of*.

Asbestus, *Common and Flexible*, (fee Amianthus and Asbestus,) *Afbeftus ligniform*, or wood afbeftus. Its colour is wood-

wood-brown, and from its fibrous ſtructure it preſents the reſemblance of wood.

Asbestous *Actinolite*. See Strahlstein.

Asbestous *Tremolite*. See Tremolite.

Asparagus-Stone. See Apatite, *Addenda*.

Asphalt, ſlag mineral pitch; *Bitume ſolide*, Haüy. (See Asphaltum.) Aſphalt appears to be indurated petroleum: it occurs in veins, interſecting ſtrata connected with coal ſtrata, and near baſaltic rocks.

Atacamite, muriate of copper. See Copper-Ores, and Sandy *Copper*.

Augite, *Pyroxene*, Haüy. (See Augit.) Since that article was written, it has been diſcovered that augite forms a conſtituent part of many baſaltic rocks in Great Britain, and that it is alſo a common conſtituent of almoſt all dark-coloured lava. (See Volcanic *Products*.) Augite occurs cryſtallized, and in angular and round pieces. The cryſtals are generally ſix or eight ſided priſms, with dihedral ſummits. According to Haüy, the primitive form is an oblique rhomboidal priſm, the alternate angles of which are 92° 18′ and 87° 42′. The colour of augite inclines to green and greeniſh-black: it is more or leſs tranſlucent. Augite has generally a darker colour than olivine, and a greater hardneſs and ſpecific gravity. They very frequently occur together in baſalt and lava. Werner divides augite into four ſubſpecies: *granular augite*, which is opaque, and has hitherto been found only at Arendal in Norway: *foliated augite*, the luſtre of which is reſino-vitreous and internally ſhining, approaching to ſplendent; it occurs at Etna and Veſuvius, and in the baſalt of Bohemia: *conchoidal augite*, which is ſometimes of an olive-green colour, and has an imperfect flat conchoidal fracture: and *common augite*. There is alſo a variety of augite which occurs maſſive or diſſeminated, of a deep black colour and opaque; this has been called *ſlaggy augite*. The term pyroxene, or a ſtranger to fire, given to this mineral by Haüy, is extremely inappropriate, as this mineral forms a conſtituent part of moſt dark-coloured lava.

Automalite, *Spinelle zincifere*, Haüy. (See Ruby.) This mineral is claſſed with the ſpinel-ruby. The ſpecific gravity is from 4 to 4.2: it is remarkable for containing 28 *per cent.* of oxyd of zinc. It occurs imbedded in talcous ſlate at Fahlun, in Sweden.

Axinite. See Thummerstone.

Azure-Stone, *Lazulite*, Haüy. See Lazuli Lapis.

Basalt. See Basalt, *Addenda*, and Whin-stone, Rowley-*Rag*, and Volcanic *Products*.

Basaltic *Hornblende*, *Amphibole cryſtallizée*, Haüy. This mineral is frequently confounded with ſchorl by the older mineralogiſts: it has a velvet-black or browniſh-black colour; it occurs in irregular ſix-ſided priſms, variouſly acuminated, but moſt frequently by flat trihedral pyramids with rhomboidal faces. The ſtructure is lamellar, with joints in two directions parallel to the ſides of an oblique rhomboidal priſm, the alternate angles of which are $124\frac{1}{2}$° and $55\frac{1}{2}$°. It is opaque, and has a ſplendent and vitreous luſtre; it has a fine-grained uneven fracture; it ſcratches glaſs; and melts with difficulty into a black glaſs. The ſpecific gravity is from 3.15 to 3.25. The conſtituent parts, as given by Klaproth, are

Silex - - - - -	47
Alumine - - - - -	26
Lime - - - - -	8
Magneſia - - - - -	2
Oxyd of iron - - -	15
Water - - - -	.50
	98.50

It occurs in common baſalt, in wacke, and in lava; alſo in ſome kinds of porphyry. It decompoſes more ſlowly than baſalt; hence, according to profeſſor Jameſon, we frequently find cryſtals of baſaltic hornblende diſperſed through clay formed by the decompoſition of baſaltic rocks. See Hornblende, *Addenda*.

Basanite, black flinty ſlate. See Slate.

Bergmannite, a mineral which occurs maſſive with grey and red quartz at Freidichſwarn, in Norway, and is claſſed with ſcapolite in the felſpar family in Jameſon's Mineralogy. Its colours are greeniſh and greyiſh-white, or yellowiſh-grey and muddy fleſh-red. It is extremely gliſtening, with a luſtre between pearly and reſinous. The ſtructure is delicately fibrous, curved, or diverging. It is faintly tranſlucent on the edges, and ſcratches felſpar. It melts before the blow-pipe without intumeſcing into a white enamel.

Beryl. (See Beryl and Emerald.) In Weiſs's collection at Vienna, there are two cryſtals of beryl in a group croſſing each other, which are a foot and a half in length, and one foot in diameter. It has been found in alluvial ſoil, in the upper part of Aberdeenſhire, and in the county of Wicklow, in Ireland, imbedded in granite.

Bildstein. See Agalmatolite.

Bismuth, *Native*. See Bismuth-*Ore*.

Bismuth, *Glance*, or *Sulphuretted Biſmuth*. See Bismuth-*Ore*.

Bismuth-*Ore*, *Plumbo cupriferous*, has a ſteel-grey colour, with a pale copper-red tarniſh. It occurs diſſeminated and cryſtallized in oblique four or ſix-ſided acicular priſms, longitudinally ſtreaked. The cryſtals are frequently adhering together, and are ſometimes curved, and divided by croſs rents. The luſtre is metallic. The croſs fracture is fine-grained and uneven. It yields eaſily to the knife. The ſpecific gravity is 6.2. Before the blow-pipe, it melts into a ſteel-grey globule; by continuing the heat, it is partly volatilized, and depoſits in the charcoal a yellow powder, after which there remains a red globule, containing a grain of cupriferous metallic lead, which communicates a blueiſh-green colour to borax. According to John, the conſtituent parts are,

Biſmuth - - - -	43.20
Lead - - - -	24.32
Sulphur - - - -	12.10
Sulphur - - - -	11.58
Nickel - - - -	1.58
Tellurium? - - -	1.32
Gold - - - -	0.79
	94.89

It occurs near Berezof, in the diſtrict of Catharinenburg, in Siberia.

Bismuth-*Ore*, *Cupreous*, or *Cupriferous ſulphuretted Biſmuth-Ore*, has a light lead-grey colour, ſometimes ſteel-grey and tin-white. It occurs maſſive, diſſeminated, and in diverging priſms. The luſtre is metallic; it is ſectile. According to Klaproth, the conſtituent parts are,

Biſmuth - - - -	47.24
Copper - - - -	34.66
Sulphur - - - -	12.58
	94.48

This is a very ſcarce ore of biſmuth.

Bismuthic *Silver-Ore*. See Silver-Ore.

Bitumen,

Bitumen, *Liquid*, *Tenacious*, *Solid*, *Compact*, and *Elastic*. See Bitumen.

Bituminous *Marle-Slate* occurs in beds in the lower ſtratified lime-ſtone in various parts of Europe. It has a dark-brown or blackiſh-grey colour, a glimmering or gliſtening luſtre, a ſlaty ſtructure, and is ſoft, meagre, opaque, and ſectile. It frequently contains ores of copper. It is remarkable for the number of petrified fiſh which occur in it. It alſo contains foſſil remains of ſhells, corals, and of cryptogamous freſh-water plants. In many of its characters, it appears to reſemble the alum-ſhale of Whitby. It is a frequent mineral in Saxony, Thuringia, Franconia, Bohemia, Bavaria, and in Switzerland.

Bituminous *Wood*, a variety of brown-coal or wood-coal, in which the fibres of the wood are diſtinguiſhable. See Coal and Wood-*Coal*.

Black *Coal*. See Coal.

Black *Chalk*, or *Drawing-Slate*, *Ampelite graphique*, Fr. occurs in beds, in rocks of the ſlate formation. It has a blueiſh or greyiſh-black colour, a ſlaty ſtructure, an earthy croſs fracture, is dull, meagre to the touch, and leaves a diſtinct mark on paper. It is ſectile, and becomes gliſtening in the ſtreak. The ſpecific gravity is 2.11. According to Wregleb, its conſtituent parts are,

Silex - - - -	64
Alumine - - - -	11
Carbon - - - -	11
Water - - - -	7
Iron - - - - -	3

It is found at Morilla in Spain, in Brittany, in Germany, and in Italy. It is cut into ſquare pencils, and uſed for drawing; it is alſo ground and uſed in painting. Thoſe varieties which have the darkeſt colour and the fineſt earthy texture are to be preferred. The pencils become hard, unleſs kept in a moiſt place.

Black-Jack, a provincial name for blende.

Blende, *Black*, *Brown*, and *Yellow*, various ſulphurets of zinc. See Zinc-Ores.

Bog *Iron-Ores*. (See Iron-Ores.) Werner ſuppoſes bog-iron, whether in meadows, ſwamps, or marſhes, to be formed by water impregnated with vegetable acid, diſſolving part of the iron in the rocks over which it flows, which, being poured into hollows, becomes ſtagnant, and evaporates. Thus ſucceſſive depoſitions are formed, which are at firſt yellowiſh earthy, and of little conſiſtence. This is moraſs-ore. In courſe of time, it becomes harder, and the colour paſſes to brown, forming ſwamp-ore. After the ſwamp is dried up, the ore becomes much harder, and paſſes into meadow-ore, which is covered with ſoil and vegetation.

Bole. See Bole.

Bolognese *Spar*, or *Radiated Heavy Spar*. See Heavy *Spar*, *Addenda*.

Boracic *Acid*, *Native* or *Saſſoline*, is found in ſaline incruſtations on the borders of hot ſprings, near Saſſo, in the territory of Florence. It has a greyiſh or yellowiſh-white colour; it occurs in thin cruſts or minute pearly ſcales; it is ſoft and friable, and is feebly tranſlucent. To the taſte, it is ſlightly bitter and acidulous. It melts eaſily before the blow-pipe into a tranſparent globule. According to Klaproth, the conſtituent parts are,

Boracic acid - - - - -	86
Ferruginous ſulphate of magneſia	11
Sulphate of lime - - -	3
	100

Boracite, *Magneſie boratée*, Haüy. (See Boracite.) Vauquelin found no lime in this mineral, and ſuppoſes it to be a ſimple *borate of magneſia*. Boracite is remarkable for its electric properties when heated. The form is generally that of the cube, and thoſe angles which are diagonally oppoſite are, one poſitive, and the other negative, forming eight electric poles.

Botryolite occurs in mamillary or botryoidal concretions, in a bed of gneiſs, near Arendal in Norway, aſſociated with quartz, ſchorl, calcareous ſpar, and iron pyrites. Its colours are, pearl-grey, greyiſh or reddiſh-white, and pale roſe-red. The colours are concentric ſtripes. It has a delicately fibrous ſtellular ſtructure, and ſometimes a ſplintery fracture. It has a pearly glimmering luſtre internally, is tranſlucent on the edges. According to Klaproth, the ſpecific gravity is 2.88; and the conſtituent parts are,

Silex - - - - - -	36.0
Lime - - - - - -	39.5
Boracic acid - - - - -	13.5
Oxyd of iron - - - - -	1.0
Water - - - - - -	6.5
	96.5

Earthy botryolite occurs with the above, which has a ſnow-white colour, and an earthy fracture.

Bovey *Coal*. Bituminous wood coal, found at Bovey Heathfield, Devonſhire. See Coal.

Bronzite, *Diallage metalloide*, Haüy. A mineral nearly allied to Labrador hornblende or hyperſtene. It has a yellowiſh-brown or pinchbeck-yellow colour, and a ſemimetallic luſtre: it occurs maſſive, and coarſely diſſeminated: it has a foliated and fibrous ſtructure, with a diſtinct ſingle cleavage. It is opaque. The ſpecific gravity is 3.2. According to Klaproth, the conſtituent parts are,

Silex - - - - - -	60.0
Magneſia - - - - -	27.5
Iron - - - - - -	10.5
Water - - - - - -	0.5
	98.5

It occurs in ſienite at Glentilt, in Perthſhire, and at the Lizard, in Cornwall, intermixed with jade in ſerpentine.

Brown *Spar*, *Pearl Spar*, or *Dolomite Spar*; *Chaux carbonatée ferro manganeſefere*, Haüy; *Bitter Spath*, Werner. Its prevailing colours are, milk-white, greyiſh-white, yellowiſh-grey, and pearl-grey: it alſo occurs red, brown, yellow, and black. It occurs both maſſive and cryſtallized in oblique rhomboids, and in compreſſed hexahedrons. The joints are parallel to the faces of an oblique rhomboid, the alternate angles of which meaſure 106° 18′ and 73° 45′. The faces of the rhomb are ſometimes convex or concave; it occurs alſo in lenticular forms. The luſtre is ſhining, and between vitreous and pearly: it is more or leſs tranſlucent. It yields to the knife, but is harder than calcareous ſpar. Its ſpecific gravity is from 2.18 to 2.88. It hardens and becomes an opaque browniſh-black before the blow-pipe. It diſſolves ſlowly in cold muriatic acid, but with conſiderable effervеſcence in hot acid. According to Klaproth, the conſtituent parts are,

Carbonate of lime - - -	53
——— magneſia - -	43
Oxyd of iron and manganeſe -	3
	99

The

The proportion of manganefe and iron is fometimes much greater, and there are feveral intermediate varieties, which it is difficult to determine whether they are to be claffed with brown fpar or fparry iron-ore. Brown fpar occurs in veins along with galena and other ores of lead, in the mines of Cumberland and Northumberland. Fibrous brown fpar, both maffive and in balls, occurs in veins in Lower Hungary. Columnar brown fpar has a fplendent luftre and a foliated ftructure, but no diftinct cleavage can be obferved in it. The fragments are wedge-fhaped. It has been found at Gerfdorf in Saxony, and Guanaxto in Mexico. The name brown fpar was given to this fpecies becaufe it changes its colour, on expofure to the air, from a light to a dark brown, bordering on black.

Buttermilk, *Silver*. See Silver-Ores.

Byssolite, a name given by Sauffure to a variety of afbeftous actinolite, which occurs in minute acicular diverging cryftals, which are elaftic. See Actinolite.

Cacholong, *Quarz agate cacholong*, Haüy, is by fome mineralogifts confidered as a variety of milk-white chalcedony, by others as a kind of common opal. Cacholong is diftinguifhed by its milk-white colour, its refinous luftre, its even fracture, and its want of tranflucency, except at the edges. It fometimes adheres when applied to the tongue. This mineral accompanies flints and chalcedony, and, according to Brongniart, even pitch-ftone is fometimes coated with it; hence it is fuppofed to be the refult of alteration in thefe minerals, produced by an unknown caufe, as it is obferved paffing into them by almoft imperceptible gradations. The true cacholongs, which have given the name to this variety, are found near the banks of the river Cach, in Bucharia; they are fpread over the fields, but are not rounded; on the contrary, they form tables compofed of alternate layers of cacholong and chalcedony. Cacholongs are fometimes cut and employed in jewellery.

Calamine. See Zinc-Ores.

Calcareous *Spar*, cryftallized carbonate of lime. See Lime-stone.

Calc *Sinter*. See *Stalactical fibrous Lime-ftone*, in the article Lime-stone.

Calc *Tufa*, or *Tufaceous Lime-ftone*, a light porous lime-ftone, formed by the depofition of calcareous matter, in calcareous fprings, or near lakes or rivers. It frequently enclofes the remains of animals or vegetables which have been encafed and imbedded in it by fucceffive depofitions. See Tufa.

Calp, a name given by Kirwan to a dark ferruginous lime-ftone, agreeing in many of its characters with the Englifh lias. See Lias, *Addenda*.

Candle *Coal*. Bituminous coal, fo called on account of the great light which it affords in burning. See Coal.

Cat's-Eye, *Quarz agathe chatoyant*, Haüy; by fome mineralogifts called *falfe opal*. It appears to be a variety of agate occurring like the latter mineral in trap rocks, but remarkable for reflecting a peculiar play of colour, refembling that of the eye of a cat, whence its name; it is ufed in jewellery, and is generally cut into ring ftones. Cat's-eye occurs maffive and in loofe angular and rounded pieces; its colours are various, inclining moft frequently to yellowifh and greenifh-grey, and fometimes to brown-red and greyifh-black. It exhibits a beautiful opalefcence when cut in a fpherical form, which proceeds from the fibrous ftructure, and fometimes from the intermixture of amianthus. It is tranflucent in different degrees; it has a fhining vitreo-refinous luftre, a fmall conchoidal fracture; it fcratches quartz. Cat's-eye becomes opaque and fpotted by expofure to the blow-pipe. Its fpecific gravity is 2.64. According to Klaproth, its conftituent parts are,

Silex	95.00
Alumine	1.75
Lime	1.50
Oxyd of iron	0.25
	98.50

Cat's-eye occurs in the Hartz, in Hanover, in trap, with amianthus, afbeftus, axinite, and calcareous fpar. It is brought from Ceylon, Malabar, Sumatra, Perfia, and Arabia.

Celestine, fulphate of ftrontian. See Strontian.

Cerium, or *Cerite*, *Cerium oxydé filicifere*, Haüy, an ore of the newly-difcovered metal cerium. (See Cerium.) The colour is between rofe-red and flefh-red, and alfo reddifh-brown; when pulverifed it is grey; it occurs both maffive and diffeminated. The fracture is fplintery, the luftre glimmering and refinous. Opaque (Jamefon), tranfparent (Aikin). It fcratches glafs with difficulty; it is brittle and eafily frangible. Specific gravity 4.6 to 4.9. Infufible before the blow-pipe, but changes from grey to yellow. According to Klaproth, the conftituent parts are,

Oxyd of cerium	54.5
Silex	34.5
Oxyd of iron	3.5
Lime	1.2
Water	5.0
	98.7

Cerium occurs in a bed of copper pyrites, fituated in gneifs, near Riddarhytta, in Weftmannland, Sweden.

Ceylanite, *Pleonafte*, Haüy, is claffed with the ruby family by Werner: its colours are a muddy dark-blue and greyifh-black, which approaches to iron-black: it occurs in grains and in fmall cryftals, either perfect octahedrons or truncated on the edges, or with the angles acuminated by four planes, which are fet on the lateral planes, alfo in rhomboidal dodecahedrons. The cryftals are fmooth and fplendent: it is tranflucent on the edges. The fracture is flat conchoidal: it fcratches quartz. Before the blow-pipe, it is infufible. The fpecific gravity of ceylanite is 3.8. According to Berzelius, the conftituent parts are,

Alumine	27.25
Magnefia	14.63
Silex	5.48
Oxyd of iron	4.26
	51.62

This mineral was firft found in the ifland of Ceylon, where it occurs in the fands of rivers with tourmaline, zircon, fapphire, and iron-fand. It occurs in lava from Vefuvias, with olivine, augit, and mica. It occurs alfo in bafalt, near Andernach, on the Rhine.

Chabasie and *Chabafite*. See Zeolite.

Chalcedony. See Chalcedony and Quartz.

Chalk. See Chalk, and Geology, *Addenda*.

Chert, a variety of horn-ftone: it differs from flint principally by being more opaque, and having lefs luftre; it occurs in nodules and maffes in the fand under the chalk formation, and in beds in fome mountain lime-ftone.

Chiastolite, or *Hollow Spar*, occurs cryftallized in flender rhomboidal prifms, the edges of which are fometimes rounded,

rounded; fometimes four prifms are arranged in the form of a crofs. The prifms appear compofed of two diftinct fubftances, as if they had once been hollow, and thefe hollows filled up with clay-flate, nearly fimilar to what the cryftals are imbedded in. The exterior part of the prifm is of a greyifh-white or reddifh colour, and varies in thicknefs, in fome fpecimens being a mere fhell; within this, is a dark-blue or black prifm, exactly parallel to that by which it is inclofed. Frequently from each angle of the interior prifm a black line or thread proceeds, bifecting the correfponding angle of the white prifm, and often terminated by a fmall black prifm. The white part exhibits a lamellar ftructure, parallel with the lateral planes of the prifm: it has a flight gliftening luftre, is tranflucent, and fcratches glafs. The fpecific gravity is 2.9. Before the blow-pipe, it fufes into a whitifh fcoria; the black part affords a black glafs. This mineral occurs in acicular cryftals in fome beds of dark flate in the mountain Skiddaw, Cumberland. The largeft cryftals are found in clay-flate, near St. Brieux, in Brittany. Some mineralogifts confider chiaftolite as the fame fubftance as andalufite; others clafs it with common felfpar, and fome regard it as a diftinct fpecies.

Chlorite, *Talc chlorite*, Haüy. This mineral is nearly allied to talc and mica. The prevailing colour is various fhades of green; hence it derives its name from the Greek χλωρος, *green*. It is divided by profeffor Jamefon into four fub-fpecies: earthy chlorite, common chlorite, flaty chlorite, and foliated chlorite.

Earthy Chlorite occurs maffive and diffeminated, and incrufting other minerals, and inclofed in dendritical forms in adularia and rock-cryftal. It confifts of fine fcaly particles clofely adhering, and has a glimmering or gliftening pearly luftre, and feels rather greafy. The green colour becomes lighter in the ftreak. The fpecific gravity is 2.6. Before the blow-pipe, it melts into a blackifh flag. According to Vauquelin, the conftituent parts are,

Silex	26.50
Alumine	18.50
Magnefia	8.00
Muriate of foda and potafh	2.00
Oxyd of iron	43.00
	98.00

According to Haüy, the fcaly particles are regular hexagonal prifms when viewed with the microfcope.

Common Chlorite is a leek or dark-green colour, intermixed with black. It occurs in rocks of various kinds, in beds and veins, either alone, or with quartz, magnetic iron-ftone, iron-pyrites, hornblende, actinolite, and other minerals. It is amorphous, has a glimmering luftre, an earthy fracture, and a fine granular, laminated, or fcaly ftructure. Common chlorite is foft, opaque, and greafy. Its fpecific gravity is 2.8. It occurs in various parts of Scotland, and in Cornwall, Cumberland, and all alpine parts of England.

Foliated Chlorite: Talc chlorite, Haüy.—Its colour is leek-green: it occurs cryftallized in fix-fided tables, curioufly aggregated in cylindrical or conical forms. The cryftals are longitudinally ftreaked. The luftre is refinous, either gliftening or fhining. The ftructure is curvedly lamellar, with a fingle cleavage. It is opaque or tranflucent at the edges; it is foft, fectile, and rather greafy. The fpecific gravity is 2.8. According to Lampadius, the conftituent parts are,

Silex	35
Alumine	18
Magnefia	30
Iron	19
Water	3
	105

Foliated Chlorite is found in various parts of the continent of Europe, and on the ifland of Jena, one of the Hebrides.

Chlorite Slate has a greyifh or darkifh-green colour; it occurs in beds in clay-flate, fometimes affociated with talc-flate, into which it paffes. It has a gliftening refinous luftre, a flaty ftructure, inclining to fcaly. On minute examination, it appears compofed of fmall fcales of chlorite clofely adhering. Chlorite-flate forms beds in mountains of clay-flate in various parts of the Grampian-hills. It paffes into hornblende-flate and clay-flate. The fpecific gravity is 3.03.

Chlorophane, a variety of fluor fpar from Siberia, which gives out a beautiful apple-green light when placed on a heated iron. Pallas mentions a pale-violet blue variety fpotted with green, which becomes phofphorefcent when held in the hand, and gives out a pale-whitifh light; in boiling water, it emits a green light, and at a higher temperature a blue light. See Fluor Spar.

Chromate *of Iron*, *Fer chromaté*, Fr. has a pitch-black colour, with fomewhat of an olive tinge fuperficially. It occurs maffive and diffeminated, and alfo cryftallized in octahedrons. It has a fhining luftre, between refinous and metallic. The fracture is uneven, or imperfectly fmall conchoidal, and fometimes imperfectly lamellar. It fcratches glafs, is opaque. The colour of the ftreak is afh-grey or brownifh. The fpecific gravity is 4.03. It is rarely magnetic, is infufible, but tinges borax of a beautiful green colour. According to Vauquelin, the conftituent parts are,

Chrome of France.	
Oxyd of chrome	43
Oxyd of iron	35
Alumine	20
Silex	2
	100

According to Klaproth,

Chrome of Steria.	
Oxyd of chrome	55
Oxyd of iron	33
Alumine	6
Silex	2
Lofs by heating	2
	98

Chromate of iron occurs in beds and veins, and in imbedded maffes, in ferpentine and talc-flate. It has been found at Portfoy, in Bamffhire, and is faid to occur in confiderable quantities in the Shetland iflands. It occurs in the vicinity of Nantes, and in the department of Van. The greateft quantity has hitherto been found in ferpentine, in the Bare-hills near Baltimore. The chromic acid

acid obtained from this mineral when combined with lead forms a beautiful yellow pigment, and is now an article of commerce.

Chromate *of Lead*, red lead-ore. See Lead-Ores.

Chrysocolla, *Earthy Malachite*, *Criore malachite chrysocolle*, Fr. See Copper-Ore.

Chrysolite, *Peridot chryfolithe*, Fr. (See Chrysolite.) This gem is the fofteft of the precious ftones; its colours change by heat. It is brought to Europe from the fhores of the red fea. *Jamefon.*

Chrysoprase. Apple-green chalcedony coloured by the oxyd of nickel. (See Chrysoprase.) It has hitherto been found only in the vicinity of the towns of Glaffendorf, Grochau, and Kofemutz, in Lower Silefia. It is fofter than common chalcedony. It is ufed in jewellery.

Cimolite. See Cimolite.

Cinnabar, *Mercure fulphuré*, Haüy. (See Mercury-Ores.) Befides the localities of cinnabar there enumerated, various mines of cinnabar occur in New Spain. In the kingdom of New Granada, cinnabar is found in three different places in veins, and alfo in alluvial foil, mixed with gold. In Peru, cinnabar occurs in various parts, particularly near the town of Huancavelica, at the height of twelve thoufand feet above the level of the fea. Cinnabar is found in veins near to Sillacara, interfecting alpine lime-ftone; thefe veins, according to Humboldt, at prefent furnifh all the mercury of Peru.

Cinnamon-stone. This gem was originally found in the fands of rivers in Ceylon. It has been claffed with hyacinth, but is a variety of garnet. Its colours are, hyacinth-red inclining to orange-yellow. It is found in blunted-angular or in roundifh pieces. It has a fhining vitreous luftre approaching to fplendent. The fracture is flat and fmall conchoidal. It is tranfparent or femi-tranfparent, but generally full of cracks. It fcratches quartz with difficulty. When cut it feels rather greafy. The fpecific gravity is 3.6. According to Klaproth, the conftituent parts are,

Silex	38.80
Alumine	21.25
Lime	31.25
Oxyd of iron	6.50
	97.80

Before the blow-pipe, it fufes into a blackifh enamel. When free from flaws it is of confiderable value.

Clay, *Porcelain Clay*, *Potters' Clay*, and *Slate Clay*. See Clay.

Clay *Iron-ftone*, *Argillaceous Iron-ftone; Fer oxydé maffif*, Haüy. (See Iron-ores.) The name has been inappropriately given to this fpecies of iron-ore, as it frequently contains fcarcely any alumine or clay in its compofition. The following analyfis of Defcotels, given in the Ann. de Chemie for 1812, N° 251, will fhew how greatly this fpecies of ore varies in its compofition.

	From Blancheland.	Geiflantern.	Colebrookdale, Shropfhire.
Oxyd of iron	54.0	38.60	50.0
Oxyd of manganefe	2.4	1.8	2.6
Silex	12.0	32.0	10.6
Alumine	1.0	4.0	2.0
Magnefia	2.0	4.3	2.4
Carbonic acid and water	24.0	20.0	32.0

In thefe fpecimens, the iron was in the ftate of carbonate; in others, it exifts in the ftate of oxyd. According to Mr. Jamefon, it would appear that the carbonated iron-ftones by decompofition lofe their carbonic acid, and are in time converted into the oxydated varieties. In thofe common *clay iron-ftones* which have a yellow or brown ftreak, the iron is in the ftate of hydrate; in thofe having a red ftreak in the oxydated ftate, and in moft of the varieties having a grey ftreak, the iron is carbonated. When the carbonated varieties begin to decay they become foft, and affume a liver or reddifh-brown colour. This fpecies of iron-ftone, befides occurring in numerous thin ftrata alternating with coal-fhale and fand-ftone in the coal formation, occurs in kidney-fhaped and rounded nodules. The greateft repofitory of this ore in Great Britain is in the coal bafin extending from Pembrokefhire into Glamorganfhire, on the borders of the Briftol Channel.

Clay-slate, *Argillaceous Schiftus*. See Slate.

Clay-stone is nearly connected with bafaltic and porphyritic rocks of the trap formation. It forms the bafis of clay porphyries. The colours of clay-ftone are blueifh and yellowifh-grey or yellowifh-white, lavender-blue and brownifh-red. It is fometimes fpotted and ftriped. It has a fine earthy fracture, fometimes inclining to flaty or conchoidal. The fragments are angular and rather blunt-edged. It is opaque, yields to the knife, and is rather eafily frangible. The fpecific gravity is 2.2. It occurs in various parts of Scotland, in North Wales, and in Shropfhire.

Clink-stone, *Phonolite*, *Porphyry-flate*, *Felfpath compacte fonore*, Fr. has moft frequently a greenifh-grey colour. It occurs in beds of confiderable magnitude in rocks of the trap formation. (See Trap.) The principal fracture is flaty, with a fcaly afpect and a gliftening pearly luftre. The crofs fracture is fplintery and faintly glimmering. It occurs columnar and tabular, is tranflucent on the edges, and eafily frangible. The thin tables yield a metallic found when ftruck. The fpecific gravity is 2.8. It melts before the blow-pipe into a grey-coloured glafs. According to Klaproth, the conftituent parts are,

Silex	57.25
Alumine	23.50
Lime	2.75
Soda	8.10
Oxyd of iron	3.25
Manganefe	0.25
Water	3.00
	98.10

This mineral is regarded as principally compofed of compact felfpar. It paffes into bafalt, with which rock it is often affociated.

Coal, *Black* and *Brown*. (See Coal, and Collieries.) The coal called by the Germans glance-coal is defcribed in that article as uninflammable or Kilkenny coal. For a further account of it, fee Glance-*Coal, Addenda*.

Cobalt-ores. (See Cobalt.) Earthy cobalt-ore has been found in fand-ftone at Alderly-edge, in Chefhire; and other ores of cobalt have recently been difcovered in feveral mines in Cornwall.

Coccolite, *Pyroxene granuliform*, Haüy. A granular variety of augit. (See Augit.) The colour is various fhades of green. It occurs in flightly coherent granular concretions, has a lamellar ftructure, a fhining vitreous luftre, is more or lefs tranflucent, and fcratches glafs. The fpecific ſpecific gravity is 3.3. According to Vauquelin, the conſtituent parts are,

Silex	50.0
Lime	24.0
Magneſia	10.0
Alumine	1.5
Oxyd of iron	7.0
Oxyd of manganeſe	3.0
	95.5

COLUMBITE, an ore of tantalum. See TANTALITE.

COMPACT *Felſpar*. See FELSPAR, *Addenda*.

COPPER *Nickel*. See NICKEL-ORES, *Addenda*.

COPPER-ORES. (See COPPER-ORES, and PHOSPHATE *of Copper*, *Addenda*.) The following table of the annual quantity of copper raiſed in Europe is given in the laſt edition of Jameſon's Mineralogy, vol. iii. p. 196. The authority is not ſtated.

Quintals of 100 Pounds.	
England	200,000
Ruſſia	67,000
Auſtrian dominions	60,000
Sweden	22,000
Kingdom of Weſtphalia in 1808	17,229
States of Denmark	8,500
Bavaria (including the Tyrol)	3,000
France	2,500
Saxony in 1808	1,320
Pruſſia after the treaty of Tilſit	0,337
Spaniſh European mines	0,309
Total of quintals	382,195

CORNELIAN. See CHALCEDONY and AGATE.

CORUNDUM, *Corinden*, Fr. The French mineralogiſts claſs as varieties of corundum the oriental *ruby*, the *ſapphire*, and *emery*. (See theſe articles.) Though they are principally compoſed of alumine, they are, excepting the diamond, the hardeſt of mineral ſubſtances, and nearly the heavieſt of earthy minerals, the ſpecific gravity being from 3.87 to 4.28. Common corundum, or adamantine ſpar, has a greeniſh-white colour: it is ſometimes pearl-grey, brown, or red. It is tranſlucent and ſometimes nearly tranſparent, and is doubly refracting. It has a diſtinct lamellar ſtructure, and ſplits into rhomboids, the angles of which are 86° 38′ and 93° 22′. (See ADAMANTINE *Spar*.) This mineral is found imbedded in granite, like felſpar, in various parts of India, and alſo in North America, and imbedded in micaceous ſchiſt in Italy.

CROSS-STONE, *Harmotomé*, Haüy. See ZEOLITE.

CRYOLITE, *Alumine fluatée*, Fr. This mineral has hitherto been found only in Weſt Greenland. It occurs in two thin layers in gneiſs. Its name is derived from the Greek word denoting ice, becauſe this mineral melts almoſt like ice at a low heat. Its colours are pale greyiſh-white, ſnow-white, and yellowiſh-brown. It occurs maſſive and diſſeminated. It has a ſhining or gliſtening vitreous luſtre, inclining to pearly, and is tranſlucent. The ſtructure is imperfectly lamellar, with joints in three directions parallel to the faces of a rectangular parallelopiped. It is ſofter than fluor ſpar, and is eaſily frangible. The ſpecific gravity is 2.9. It becomes more tranſlucent in water, but does not melt. Before the blow-pipe it firſt melts, then hardens, and aſſumes the appearance of a ſlag. According to Klaproth, the conſtituent parts are,

Alumine	24
Soda	36
Fluoric acid and water	40
	100

According to Vauquelin,

Alumine	21
Soda	32
Fluoric acid and water	47
	100

CRYSOBERYL, *Cymophane*, Haüy. See CRYSOBERYL.

CUBE-ORE, *Arſeniate of Iron*, *Fer arſeniaté*, Haüy. See IRON-ORE.

CUPREOUS *Arſeniate of Iron*, *Martial Arſeniate of Copper*. See COPPER-ORES.

CYANITE, or *Kyanite; Sappare*, Sauſſure; *Dorthene*, Haüy. See KYANITE, *Addenda*.

DATOLITE, (ſee DATHOLITE,) is compoſed of boracic acid, united with lime and ſilex. It occurs maſſive and cryſtallized in oblique four-ſided priſms, generally truncated on the edges and angles. The primitive form of the cryſtal is ſtated by Hanſmann to be an oblique four-ſided priſm, with angles of 77° 30′ and 102° 30′. It gelatinizes with acids. In the flame of a candle it becomes opaque and friable. Before the blow-pipe it intumeſces, and then melts into a globule of a pale roſe-colour.

DIALLAGE, *Smaragdit* of Sauſſure; *Diallage verte*, Haüy. Its colours are graſs-green and apple-green; it occurs maſſive and diſſeminated. The luſtre is ſhining, gliſtening, and pearly; it is tranſlucent on the edges. Diallage has a lamellar ſtructure, with a two-fold nearly rectangular cleavage, only one of which is diſtinct. It is rarely ſo hard as glaſs. The ſpecific gravity is 3. Before the blow-pipe, it melts into a grey or greeniſh enamel. According to Vauquelin, the conſtituent parts are,

Silex	50.00
Magneſia	6.00
Alumine	11.00
Lime	13.00
Chrome	7.00
Iron	6.30
Copper	1.50

Diallage is found in Corſica with ſauſſurite, and on Mont Blanc in Switzerland; alſo in Carinthia and Tranſylvania. The mixture of diallage and ſauſſurite is named Gabbro by the Italians, Euphotide by the French, and Verde de Corſica duro by artiſts. When cut and poliſhed it has a beautiful appearance, and is made into various articles of ornament.

DIALLAGE *Metalloide*. See BRONZITE, HYPERSTENE, and SCHILLER *Spar*, *Addenda*.

DIAMOND, *Diamant*. (See DIAMOND.) In addition to the characters of the diamond given under that article, it may be proper to ſtate, that beſides the colours there enumerated, the diamond occurs ſometimes blue, red, brown, yellow, and green, with the following tranſitions. The only variety of blue is indigo-blue, which appears to paſs into red. Of red, the varieties are roſe-red and cherry-red. From the latter colour it paſſes into olive-brown, and yellowiſh-brown, ochre-yellow, orange-yellow. wine-yellow, and

and fulphur-yellow; further into fifkin-green, afparagus-green, piftachio-green, leek-green, and mountain-green, which latter paffes into greenifh-grey and greenifh-white.

The olive-brown paffes into blackifh-brown, pitch-black, and greyifh-black.

Befides occurring cryftallized, the diamond is alfo found in rolled pieces and grains. The cryftallizations of the diamond, befides the octahedron and its varieties, are, the perfect tetrahedon; the tetrahedron with truncated angles, or with the angles acuminated by three planes, fet on the lateral planes; fegments of the tetrahedron, either detached or united, forming twin cryftals; the rhomboidal dodecahedron, with convex planes or faces; the fame figure fomewhat elongated; the dodecahedron, with the planes divided diagonally; an acute double fix-fided pyramid, with the lateral planes fet on each other, and the apex acuminated by fix planes fet on the lateral planes; a flat double three-fided pyramid, with convex planes fet laterally on each other, and the angles of the common bafe acuminated by four planes fet on the lateral planes; a flat double three-fided pyramid, on which the lateral planes of the one are fet on the lateral edges of the other, and the angles of the common bafe truncated; a fix-fided table, with oblique terminal plates; and laftly, the diamond has been found in a cubic form, either perfect or with the edges truncated, or varioufly modified.

The furface of the octahedron is either fmooth or ftreaked; the external luftre of the natural diamond is adamantine, and alternates from fplendent to glimmering; internally it is highly fplendent. It is feldom completely tranfparent. The black diamonds are nearly opaque. The diamond has a four-fold equiangular cleavage parallel with the planes of the octahedron in this direction; it is rather eafily frangible. The diamond fcratches all other minerals. Its fpecific gravity is ftated by Mr. Lowry at 3.488. The diamond, befides its other localities, is found in the diftrict of Serro Dofria, in Brafil: it was firft difcovered there about the middle of the laft century, in gullies of torrents, and the beds of rivers, where gold is alfo obtained, but for a very confiderable time, the diamonds being unknown, were difregarded and thrown away. Diamonds occur alfo in other parts of Brafil, in the rivers Giquitignogna, Riacha Fundon, and Rio de Peixe. See Gem.

Diaspore is regarded as a variety of wavellite. (See Wavellite.) It occurs in curved lamellar concretions eafily feparable from each other; it has a grey colour, a fhining pearly luftre, the angular pieces cut glafs. It flies before the blow-pipe, but is infufible. Its fpecific gravity is 3.43. According to Vauquelin, the conftituent parts are,

Alumine - - - - -	80
Water - - - - -	17
Oxyd of iron - - -	3
	100

Dichroite. See Iolite, *Addenda.*

Diopside. See Alalite, *Addenda.*

Dioptase, *Emerald Copper Ore*, occurs in cryftallized fix-fided prifms, acuminated by three planes fet on the lateral edges: it is tranflucent, and fcratches glafs feebly. The fpecific gravity is 3.3, Haüy. According to Luvitz, the conftituent parts are,

Oxyd of copper - - -	55
Silex - - - - - -	33
Water - - - - - -	12
	100

A very fmall fpecimen analyfed by Vauquelin gave forty-two *per cent.* of lime. This mineral is found, according to Hermann, in the land of Konguire, 125 leagues from the Ruffian frontier, where it is affociated with malachite and calcareous fpar.

Dipyre. See Zeolite.

Disthene, or *Kyanite; Sappare*, Sauffure. See Kyanite, *Addenda.*

Dolomite, a fpecies of magnefian lime-ftone, to which the name was given in honour of Dolomieu, the celebrated French Geologift. Mr. Jamefon has claffed the different kinds of magnefian lime-ftone into one order, which he calls the dolomite family: it contains four fpecies, dolomite, brown fpar, miemite, and gurhofite. The dolomite fpecies he has divided into four fub-fpecies, *common dolomite*, *dolomite fpar* or *rhomb fpar*, *columnar dolomite*, and *compact dolomite* or *magnefian lime-ftone.*

Common dolomite occurs in beds in primitive mountains, and frequently contains tremolite. It nearly refembles primitive lime-ftone or ftatuary marble, the *chaux carbonatée faccaroide* of the French, but may be diftinguifhed from it by the little effervefcence which it yields on the application of mineral acids compared with the former. The grains of dolomite are alfo more loofely adhering than in white primitive lime-ftone. The mineralogical characters of common dolomite are given under the article Dolomite. Dolomite generally phofphorefces when rubbed in the dark or heated. The conftituent parts of different dolomites are given by Klaproth as under:

	St. Gothard.	Apperiones.	Carinthia.
Carbonate of magnefia -	46.50 -	38.00 -	48.00
Carbonate of lime - -	52.00 -	65.00 -	52.00
Oxyd of manganefe -	0.25 -		-
Oxyd of iron - -	0.50 -		-
Lofs - - - - -	0.75 -		- 20
	100	103	100.20

Flexible dolomite is found in the mountain of Campo Longoman, St. Gothard.

Dolomite *Spar*, or *Rhomb Spar*. See Brown *Spar*, *Addenda.*

Dolomite, *Columnar*, occurs in ferpentine, in a mine at Mjafs, in Ruffia, in ftraight prifmatic concretions: its colour is pale greyifh-white, the luftre vitreous inclining to pearly. It is feebly tranflucent. The fpecific gravity is 2.765. According to Klaproth, the conftituent parts are,

Lime - - - - -	28.20
Magnefia - - - -	19.74
Oxyd of iron - - -	0.50
Carbonic acid - - -	39.25
Water - - - - -	11.31
Lofs - - - - -	1.
	100

Dolomite, *Compact*, magnefian lime-ftone. See Magnesian *Lime-ftone*, *Addenda.*

Egyptian Jasper. See Jasper.

Elaolite, *Fettfteen*, Werner; *Piene-graffe*, Haüy. The colours of this mineral are dark-greenifh or blueifh-grey, and flefh-red; it is tranflucent in a low degree, and has a fhining refinous luftre. The blueifh varieties difplay a peculiar opalefcence. It occurs maffive, and has a diftinct double cleavage. The fracture is uneven. It fcratches glafs, is rather

rather easily frangible, and melts before the blow-pipe into a white enamel. When pounded it gelatinizes in acids. The specific gravity is 2.58 to 2.61. According to Klaproth, the constituent parts are,

Silex	46.50
Alumine	30.25
Lime	0.75
Potash	18.00
Oxyd of iron	1.00
Water	2.00
	98.50

According to Vauquelin,

Silex	44.00
Alumine	34.00
Lime	0.12
Potash and soda	16.50
Oxyd of iron	4.00
	98.62

This mineral has hitherto been found only in the rock named zircon sienite. (See ZIRCON *Sienite.*) It is classed by Mr. Jameson in the felspar family; but is placed by Werner between jasper and cat's-eye.

ELASTIC *Mineral Pitch*, or *Elastic Bitumen.* Mineral caoutchouc. *Bitume elastique*, Haüy. See BITUMEN.

ELECTRUM, an argentiferous gold-ore, or native alloy. Its colour is a pale brass-yellow. It is not soluble either in nitrous or nitro-muriatic acid. It contains, according to Klaproth,

Gold	64
Silver	36
	100

It occurs at Schlangenberg, in Siberia.

EMERALD, *Emeraude verte*, Haüy. See EMERALD.

False emeralds are sometimes offered for sale, which are either green fluor spar, green quartz, or prase. The emerald of Brasil is sometimes the green tourmaline. The true emerald is harder than quartz. The beryl and the emerald have both the same primitive form of the crystal or the hexahedral prism. The terminal planes of the emerald are rough, those of the beryl smooth. The emerald agrees in chemical composition with the beryl, both containing from thirteen to fourteen parts of the newly-discovered earth glucine; but the colouring matter of the emerald *chrome* is wanting in the beryl. See GEM.

EMERY, *Corindon granulaire*, Haüy. (See EMERY.) This mineral owes its hardness to an intermixture of blue corundum. See ADAMANTINE *Spar*, and CORUNDUM, *Addenda*.

EPIDOTE. (See PISTAZITE, and THALLITE. Under the latter article, for Arundel in Norway *r.* Arendal.) Epidote occurs at the Malvern-hills in Worcestershire, at Wallow Cragg near Keswick in Cumberland, and near Marazzion in Cornwall.

EPSOM *Salt, Native*, or sulphate of magnesia, occurs as an efflorescence at Hurlet near Paisley, and sometimes is found efflorescent on old walls, and on the surface of different rocks, particularly gypsum, sand-stone, clay, and compact lime-stone.

EUCLASE. See EUCLASE.

FAHLERZ, Werner; grey copper ore. See COPPER-ORES.

FELSPAR. (See FELSPAR.) The name of this mineral appears to be derived from the Saxon term *fell*, a mountain, still used in the northern counties of England; hence felspar, in its original signification, denoted mountain spar. In the mineralogical systems of Werner and Mr. Jameson, the felspar family comprises various species of minerals, which are supposed to be nearly allied to felspar. The felspar species is also divided into *adularia*, *glassy felspar*, *Labrador felspar*, *common felspar*, *disintegrated felspar*, and *compact felspar*.

Adularia. (See FELSPAR.)—The forms of crystals of adularia are the same as those of common felspar. It possesses double refraction. It melts before the blow-pipe into a transparent white glass. Adularia occurs in veins in granite and gneiss, in various parts of Aberdeenshire and Bamfshire, in the isle of Arran, and in the granite of Switzerland, France, and Germany. The largest and most beautiful crystals are found in the mountain of Stelia, a part of St. Gothard. Rolled pieces having a beautiful pearly light are collected in the island of Ceylon. The variety which exhibits a strong pearly light is cut in a semi-globular form, and is sold under the name of morn-stone, and is usually worn as a ring-stone.

Glassy Felspar occurs always crystallized in broad rectangular four-sided prisms, bevelled on the extremities. These crystals are very much cracked, and always imbedded. It is transparent, and has a splendent vitreous lustre internally. Its other characters agree with adularia. It occurs in pitch-stone and trap in various parts of Scotland.

Labrador Felspar. See FELSPAR.

Common Felspar occurs variously crystallized. Haüy enumerates more than twenty of its secondary forms; several of them are represented *Plate* I. *figs.* 8, 9, 10, 11, 12, &c. *Crystallography.* The primitive form is an oblique-angled parallelopiped. The structure is perfectly lamellar, with a double, very distinct, rectangular cleavage, and an oblique indistinct cleavage intersecting the two former. The four rectangular planes have splendent faces; the faces of the oblique cleavage are dull. This remarkable character is peculiar to felspar, and may very frequently be observed in the rhomboidal fragments of this mineral. Felspar has been frequently analysed with different results. According to Berzelius, the most probable composition of common felspar, so far as we can calculate it from the many analyses of which we are in possession, is, that the alumine bears the same proportion to the potash as in alum, and that the silica contains three times the oxygen of the base. The following is therefore a comparison between the calculated and experimental results, according to the principles of Berzelius's new system of mineralogy. See SYSTEMS *of Mineralogy*.

	Vauquelin.		Klaproth.	Rose.	Calculated Result.
Silica	64	62	68	66	66.26
Alumine	20	17	15	17	17.61
Potash	14	13	14	12	16.13
Lime	2	3			
Protoxyd of iron		1		1	

The lime and protoxyd of iron are regarded as accidental admixtures. Felspar is one of the principal constituent ingredients of many of the rocks called primary, in many of the trap rocks, and many of the lighter-coloured lavas. It forms an essential constituent part of granite, gneiss, sienite, green-stone, and forms the base of many porphyries, and the rock called *white-stone.* (See WHITE-STONE.) In green-stone, the felspar is often tinged of a green colour, from the admixture of hornblende or augit. In many of the porphyries, it exists in a compact state, or as *compact* felspar. The colours of compact felspar are various shades of white, grey, green, or red. The lamellar

lamellar ftructure is nearly loft in many of the compact felfpars, particularly in thofe varieties which have little luftre. When it contains cryftals of quartz or felfpar, it conftitutes a felfpar porphyry. It forms extenfive beds in many alpine diftricts. It is diftinguifhed from horn-ftone by its inferior hardnefs, fufibility, and its frequent intermixture with hornblende or mica.

Difintegrated Felfpar has generally a greyifh-white colour. It occurs maffive and in imbedded cryftals which have the fame form as common felfpar. It is gliftening, glimmering, or dull, and foft and fectile. In fome inftances, it appears to be felfpar in a decompofing ftate; in others, to be a fofter kind of felfpar in an unaltered ftate.

Fibrolite, a mineral which occurs with corundum; it has a white or grey colour, is cryftallized in rhomboidal prifms, the angle of whofe planes are 80° and 100°. It has a fibrous ftructure, and an uneven crofs fracture. Internally it is gliftening. Fibrolite is harder than quartz. Its fpecific gravity is 3.21. According to Chenevix, the conftituent parts are,

Alumine - - -	58.25
Silex - - - -	38.00
Iron and lofs - - -	3.75
	100

Figure-Stone. Agalmetolite, or bildfteen.

Fish-Eye-*Stone*, or ichthyophthalmite.

Flint. See Flint.

Float-Stone, *Quarz nectique*, Haüy; fometimes called fwimming quartz. Its colours are yellowifh-white and grey. It is dull, earthy, and friable, abforbs water and becomes tranflucent. Its fpecific gravity is lefs than water, being from 0.448 to 0.793. The conftituent parts are,

Silex - - - - -	91 to 98
Water - - -	6
Carbonate of lime -	2
Oxyd of iron and alumine	2

It is found at St. Oien, in the vicinity of Paris, along with flint, and fometimes contains the fame petrifactions as thofe found in flint. Flint is fometimes found in the centre of float-ftone, and paffes into it by gradation. Float-ftone may therefore be confidered as a porous ftate of flint.

Flos *Ferri*, *Coralloidal Arragonite*, occurs in fnow-white dendritical branches, either fmooth or incrufted with points. It is found in the mines at Dufton Fell, Weftmoreland; it is fuppofed by count Bournon to be formed by fublimation.

Fluor Spar, *Flus*, Werner; *Chaux fluatée*, Fr. See Fluor Spar.

Foliated *Granular Lime-ftone*. The name given by Mr. Jamefon to cryftalline primitive lime-ftone, called by the French *chaux carbonatée fauaroide*. See Lime-stone, and Lime-stone, *Addenda*.

Fossil-Copal, or *Highgate Refin*, a refinous fubftance found in perforating the bed of London clay at Highgate. It appears to be a true vegetable gum or refin, partly changed by remaining in the earth. It gives out a refinous aromatic odour when heated, and melts into a limpid fluid. It takes fire when applied to the flame of a candle, and burns away entirely before the blow-pipe. The colour of foffil-copal is a yellowifh-brown: it has a refinous luftre, is brittle, and yields eafily to the knife. The fpecific gravity is 1.046.

Fullers'-Earth, *Argile fmectique*, French. See Fullers'-Earth.

Gadolinite. See Gadolinite.

Galena, or *Sulphuret of Lead*, *Lead Glance; Plomb fulphuré*, Haüy. See Lead.

Garnet, *Grenat*, French. (See Garnet, *Precious*, and Garnet, *Common*.) The garnet family of Werner and profeffor Jamefon, in their mineralogical fyftems, comprifes the following minerals, fuppofed to have an alliance with garnet: leucite, vefuvian, groffalar, melanite, allochroite, garnet, grenatite, pyrope, and cinnamon-ftone. (See thefe articles in the preceding volumes, and in the *Addenda*.) In the Britifh Mufeum, thefe minerals are claffed together under the name of grenatic fubftances, whereby the confufion of making the fame word reprefent both the genus and fpecies is avoided.

Glance-Coal, *Anthracite*. The coal which has a fplendent luftre, and burns without flame. (See Coal.) It is principally compofed of carbon, and paffes into graphite, or black-lead. Werner divides glance-coal into three fubfpecies; conchoidal glance-coal, flaty glance-coal, and columnar glance-coal. See Coal.

Glauber *Salt*, *Native Glauberite; Sonde fulphatée*, Fr. occurs as a mealy efflorefcence in the neighbourhood of fome falt lakes, and occafionally encrufting fand-ftone and marle-flate. It is fometimes ftalactitic, botryoidal, or cryftallized in acicular cryftals. According to Reufs, the glauber falt of Eger, in Bohemia, contains

Sulphate of foda - - -	67
Carbonate of foda - -	16
Muriate of foda - - -	11
Carbonate of lime - -	5
	99

Glassy *Felfpar*. See Felspar, *Addenda*.

Glassy *Tremolite*. See Tremolite.

Gold. (See Gold.) In addition to the localities of gold given under that article, we may ftate that native gold is found in fome of the ftream works of Cornwall, and, like the ftream tin which accompanies it, was doubtlefs once a part of the metallic veins that have been deftroyed by the natural difintegraction of the rocks which thefe once interfected. We have feen globules of native gold the fize of a pea in a matrix of quartz, in the poffeffion of the Rev. Mr. Hennor, of Plymouth.

Native gold was found in alluvial foil in various parts of Scotland, and was once extenfively worked at the lead-hills. In the time of queen Elizabeth, it is faid that three hundred men were employed in fearching for it, and that in the courfe of a few fummers a quantity was collected equal to 100,000*l.* fterling. Gold was obtained a few years fince in a ferruginous fand in Ireland, near Arklow, in the county of Wicklow. One mafs of pure gold weighing twenty-two ounces was found, which was the largeft piece hitherto difcovered in Europe. The total amount of gold exported to Europe annually from the Spanifh and Portuguefe colonies in America is ftated by Humboldt at 45,580 pounds troy, of which 25,000 pounds weight comes from the Spanifh colonies; the remainder from the Portuguefe, principally from the Brazils, where it is collected by wafhing the fands of rivers and alluvial depofits. Gold is found almoft every where along the feet of thefe immenfe mountains which run in a chain nearly parallel with the coaft, from 5° to 30° of fouth latitude. Many of the filver-ores in America are alfo rich in gold. (See Silver.)

SILVER.) For a more particular account of these repositories of the precious metals, we must refer our readers to the various travels of M. Humboldt, to whom we are indebted for almost all the correct information we have respecting the European colonies in South America. The quantity of gold and silver imported from these colonies between the years 1492 and 1803, he states at eleven hundred and sixty-six millions in pounds sterling; an amount somewhat exceeding that of the present national debt of England!!

GRAMMATITE, *Tremolite*. See TREMOLITE.

GRANULAR *Lime-stone*, statuary marble; *Chaux carbonatée saucaroide*, Fr. See LIME-STONE, and LIME-STONE, *Addenda*.

GRAPHIC *Gold* and *Graphic Tellurium*. See TELLURIUM.

GRAPHITE. Plumbago or black-lead, (see PLUMBAGO,) has an iron-grey colour, and a glimmering or glistening metallic lustre. It is sectile, and when fresh cut has a lead-grey colour: it is unctuous to the touch, yields to the nail, and leaves a distinct lead-grey mark on paper. Before the blow-pipe it gradually burns away, leaving a portion of red oxyd of iron. According to Berthollet, the constituent parts are,

Carbon - - - -	90.9
Iron - - - -	9.1

The graphite of Borrowdale occurs with ochreous and unctuous clay; it is found in nodules and masses of various sizes. The bed in which it is found lies in a rock of grey porphyrite felspar, which has been improperly called grey wacke. Three beds of scaly graphite have lately been discovered in a rock of mica-slate or gneiss, near Buley, in Inverness-shire.

GREEN *Earth*, *Chlorite zographique*, French. This mineral, though made a distinct species by Werner, appears to be soft earthy chlorite (see CHLORITE): it generally occurs in cavities or incrusting agates in amygdaloid. It is of various shades of green, is soft and sectile, and adheres slightly to the tongue. The specific gravity is 2.5. Before the blow-pipe, it is converted into a black slag. It is used as a green colour in water-painting. When slightly burned, it affords a beautiful and durable brown.

GRENATITE, *Staurotide*, Haüy; the staurolite of some mineralogists. (See STAUROLITE.) This mineral is classed in the garnet family by Werner; but it varies from garnet in the form of its crystal, which is an oblique four-sided prism, truncated on the acute lateral edges. Sometimes it is bevelled on the extremities by two planes set on the lateral edges, and the edge of the bevelment is truncated. The crystals sometimes intersect each other, forming a cross; hence it has been called cross-stone by some mineralogists: but it is a very distinct species from the *harmotome*, or cross-stone, which is a member of the zeolite family. (See ZEOLITE.) The colour of grenatite is dark reddish-brown. It is infusible before the blow-pipe. The above characters distinguish it from precious garnet. It occurs imbedded in mica-slate, and in talc, generally accompanied with kyanite and precious garnet.

GREY *Antimony-Ore*. (See ANTIMONY-ORES.) Grey antimony occurs in some of the mines in Cornwall in considerable quantities, particularly at St. Stephen's, Padstead, and Huel bays. It is found also at Glendenning, in Dumfriesshire.

GREY *Cobalt-Ore*. (See COBALT-ORE.) This mineral is found at Herland and Dolcooth mines, and in some other veins, in Cornwall.

GREY *Manganese-Ore*. See MANGANESE.

GYPSUM, selenite; *Chaux sulfatée*, Haüy. See GYPSUM.

HARMOTOME, *Cross-stone*. See ZEOLITE.

HAÜYNE, *Latialite*, Haüy. A mineral classed by the German mineralogists with the azure-stone, or lapis lazuli family. It was first discovered in the volcanic rocks of Albano and Frascati, and called *latialite*, from ancient Latium, and was afterwards discovered in the basaltic rock of Andernach, and has been called *Haüyne*, in honour of the celebrated mineralogist Haüy. Haüyne has a sky-blue colour, passing into pale Berlin-blue and blueish-green. It occurs in imbedded grains, and crystallized in minute splendent rhomboidal dodecahedrons. The fracture is conchoidal, passing into uneven; it has a vitreous lustre, is transparent or semi-transparent, scratches glass, and is infusible before the blow-pipe. When pulverized, it gelatinizes with muriatic acid, giving out an odour of sulphuretted hydrogen. The specific gravity is from 3.1 to 3.3. According to Vauquelin, the constituent parts are,

Silex - - - - - -	30.0
Alumine - - - - -	15.0
Sulphate of lime - - -	20.5
Potash - - - - -	11.0
Iron - - - - - -	1
Water - - - - -	17.5
	95.0

It has by some mineralogists been classed with sapphire, and described under the name of *saphirin*. It was arranged by Cordier with spinel.

HEAVY SPAR, *Sulphate of Barytes*, *Baro-Selenite*. This mineral exceeds in weight all other purely earthy minerals, its specific gravity being from 4.3 to 4.49. It occurs both massive and crystallized in many metallic veins. Its colours are various shades of white, yellow, red, greenish-grey, and blue. Crystallized heavy spar is transparent or translucent, and refracts doubly; it has a distinct lamellar structure, and splits into a right-rhomboidal prism, which is its primitive form; the angles of the rhomb are $101\frac{1}{2}°$ and $78\frac{1}{2}°$. The joint parallel to the base of the rhomb is the most distinct. The lustre is shining, between vitreous and resinous: it yields readily to the knife. Before the blow-pipe it decrepitates violently, and then melts into a hard white enamel. A piece exposed to the blow-pipe, and laid on the tongue, gives the flavour of sulphuretted hydrogen. The powder of some varieties of heavy spar, when calcined, absorbs light, and emits it again in the dark. Sulphate of strontian (see STRONTIAN) is the only earthy mineral with which heavy spar can probably be confounded. White lead-ore may be distinguished from heavy spar, as it is softer, and yields a metallic globule before the blow-pipe. Pure heavy spar consists of

Barytes - - - -	67
Sulphuric acid - - -	33
	100

Mr. Jameson makes the following varieties of heavy spar, which he classes as sub-species: earthy heavy spar, compact heavy spar, granular heavy spar, lamellar heavy spar, radiated heavy spar, fibrous heavy spar, and prismatic heavy spar; and he divides lamellar heavy spar into three kinds, straight lamellar heavy spar, curved lamellar heavy spar, and disintegrated lamellar heavy spar.

Earthy Heavy Spar occurs fometimes loofe, and fometimes cohering in the drufy cavities in veins: it is compofed of dull or glimmering dufty particles, which feel meagre.

Compact Heavy Spar occurs maffive, diffeminated, reniform, femi-globular; it has a coarfe earthy fracture, and is fometimes imperfectly foliated; it has a glimmering luftre, is flightly tranflucent, foft, and eafily frangible. It is often marked with dendritic delineations. According to Weftrumb, it contains

Sulphate of barytes	83
Silex	6
Alumine	1
Water	2
Oxyd of iron	4
	96

In Derbyfhire, this mineral is called *cawk* by the miners.

Granular Heavy Spar occurs maffive: the ftructure is finely granular; the ftructure of the grains is lamellar. This mineral nearly refembles granular lime-ftone, but is much heavier, and does not effervefce with acids.

Lamellar, or Cryftallized Heavy Spar, occurs in the following fecondary forms. 1. A rectangular four-fided table, either perfect, or with the terminal planes bevelled, and fometimes the angles of the bevelment are truncated. 2. An oblique four-fided table, perfect, or with the angles or edges truncated. 3. A longifh fix-fided table, either perfect or varioufly bevelled. 4. Eight eight-fided tables, either perfect, bevelled, or truncated. Curved lamellar heavy fpar occurs in diftinct concretions, which have a curved lamellar ftructure.

Fibrous Heavy Spar has a chefnut-brown colour. It occurs in reniform or botryoidal maffes, and has a plumofe or diverging fibrous ftructure.

Radiated Heavy Spar, or Bolognefe Spar.—Its colours are, fmoke-grey, afh-grey, or yellowifh-white. It occurs in roundifh compreffed pieces, which are always covered with marle or clay. The ftructure is lamellar in one direction, and in the longitudinal fracture radiated: it is tranflucent. It is remarkably phofphorefcent after being heated and expofed when cool to the light, and carried into a dark room. It was firft found at Monte Paterno, near Bologna. Its conftituent parts are,

Sulphate of barytes	62
Lime	2
Silex	16
Alumine	14.75
Oxyd of iron	0.25
Water	2
	97

Columnar Heavy Spar: Baryte fulphatée baccillaire, Haüy.—Its colours are, yellowifh, greyifh, and greenifh-white. It occurs cryftallized in acicular oblique four-fided prifms, laterally aggregated into columns; the luftre is fhining and pearly: it is tranflucent, and has a lamellar ftructure.

Prifmatic Heavy Spar is heavy fpar cryftallized in four-fided or fix-fided prifms, varioufly acuminated and modified by bevelments and truncations.

Hepatite, Baryte fulphatée fetide, Haüy, may be claffed as a variety of heavy fpar, which poffeffed the property of yielding a fetid fulphureous odour when heated or rubbed. It occurs in globular maffes, from an inch to a foot in diameter; thefe maffes have a curved lamellar ftructure. According to John, the conftituent parts are,

Sulphate of barytes, with a trace of ftrontian	93.58
Sulphate of lime	3.58
Oxyd of lime	0.87
Water, carbonaceous matter, fulphur, and alumine	2.00
	100.03

According to Klaproth,

Sulphate of barytes, with a trace of ftrontian	85.25
Carbon	0.50
Sulphate of lime	6.00
Oxyd of iron	5.00
Alumine	1.00
Lofs, including water and fulphur	2.25
	100.00

Hepatite occurs at Buxton, in Derbyfhire.

HELIOTROPE, *Quarz agathe ponctué*, Haüy.

HEMATITE, *Black and Brown; Fer oxydé hematite*, Haüy.

HEMATITE, *Red; Fer oligifte concretione*, Haüy. See IRON-ORES.

HEPATIC PYRITES, or *Lower Pyrites*. See PYRITES.

HEPATITE. See HEAVY SPAR, *Addenda*.

HIGHGATE-RESIN. See FOSSIL-COPAL, *Addenda*.

HOLLOW SPAR. See CHIASTOLITE, *Addenda*.

HONEY-STONE. See MELLITE.

HORN-STONE, a mineral nearly allied in compofition to flint, but has a more earthy texture; it received its name from the fuppofed refemblance to horn. A more opaque variety of flint, which occurs along with flint and chalcedonic flint in the fand ftrata below chalk, is called chert. (See CHERT, *Addenda*.) This is a kind of horn-ftone. Horn-ftone is the *petro-filex* of fome mineralogifts, and under that name is often confounded with *compact felfpar*. Indurated flate, which contains a large portion of filex in its compofition, is fometimes called *horn-ftone flate*. Sauffure, under the names of paliopetre and neopetre, appears to include both the fplintery horn-ftone and flinty flate of Werner. Werner divides horn-ftone into three fub-fpecies, fplintery horn-ftone, conchoidal horn-ftone, and wood-ftone.

Splintery Horn-ftone occurs of various fhades of grey, red, and green. It is generally maffive, but fometimes is found in large balls, and fometimes lenticular, or in the form of cryftals, in the cavities where cryftals have once occurred, and hence called fuppofititious cryftals. The luftre is dull, the fracture fplintery; it is more or lefs tranflucent, is fomewhat lefs hard than quartz. It is infufible before the blow-pipe, which diftinguifhes it from compact felfpar. The latter mineral is not fo hard as horn-ftone, and has more luftre. Horn-ftone paffes into compact felfpar, quartz, common jafper, and chalcedonic flint. In thefe tranfitions, it is frequently difficult to determine among which of thefe it fhould be placed. It forms the bafis of horn-ftone porphyry.

Conchoidal Horn-ftone is glimmering or gliftening, with a vitreous luftre; it has a more or lefs perfect and flat conchoidal fracture. It is harder and lefs tranflucent than fplintery horn-ftone. It occurs maffive, globular, and fometimes forms fuppofititious cryftals. It is found in veins and beds. Chert appears to belong to this fub-fpecies.

Wood-

Wood-ſtone, Quarz agathe xyloïde, Haüy, is generally various ſhades of grey, frequently ſtriped or clouded. It occurs rounded, and in the ſhape of the trunks, branches, or roots of trees; it is generally tranſlucent at the edges, with little or no luſtre. The croſs fracture is imperfectly conchoidal, the longitudinal ſplintery and fibrous. Wood-ſtone is properly wood ſilicified, in which the greater part of the vegetable matter has diſappeared, and ſiliceous matter has occupied the place, preſerving the form and texture of wood. Some wood is petrified with opal, forming wood opal; and ſometimes the mineral matter of petrified wood is quartz, or calcareous earth.

Hornblende, *Amphibole*, Haüy. The deſcription of this mineral, ſo important in geology, was omitted in the proper place, and is given here. Hornblende may be divided into common hornblende, baſaltic hornblende, and hornblende ſlate. Haüy, under the term amphibole, claſſes actinolite with hornblende. (See Actinolite.) Hornblende generally occurs of various ſhades of dark green paſſing into black; ſometimes common hornblende occurs of various ſhades of brown. Hornblende has a lamellar ſtructure longitudinally, with a two-fold oblique angular cleavage, parallel to the planes of a rhomboidal priſm, the alternate angles of which are $124\frac{1}{2}°$ and $56\frac{1}{2}°$. This is the form of the primitive cryſtal, and diſtinguiſhes it from epidote, which cleaves at an angle of $114\frac{1}{2}°$ and $65\frac{1}{2}°$, and augit or pyroxene, which cleaves at an angle of 92° and 88°. The croſs fracture of hornblende is coarſe-grained, uneven; it melts eaſily before the blow-pipe into a greyiſh-black coloured glaſs. Theſe characters, together with the cleavage, ſerve to diſtinguiſh hornblende from augit or epidote; its inferior hardneſs diſtinguiſhes it from ſchorl.

Common Hornblende occurs both maſſive, diſſeminated, and cryſtallized; the cryſtals are oblique four-ſided priſms, aggregated or long flattiſh priſms, interſecting each other, or confuſedly radiated. The ſtructure is lamellar or bladed. The cryſtals are long and deeply ſtreaked longitudinally. The luſtre is ſhining and pearly. The black-coloured varieties are opaque; the green generally tranſlucent at the edges. It yields pretty eaſily to the knife, leaving a greeniſh-grey ſtreak. It is very tough, and becomes indented by the ſtroke of a hammer. The ſpecific gravity is from 3.20 to 3.28. According to Klaproth, the conſtituent parts are,

Silex	42.00
Alumine	12.00
Lime	11.00
Magneſia	2.25
Oxyd of iron	30.00
Ferruginous mangancſe	0.25
Water	0.75
A trace of potaſh	0.00
	98.25

This mineral occurs forming beds in mountains, or is diſſeminated, as a conſtituent part of many compound rocks. It occurs occaſionally in granite, gneiſs, mica-ſlate, and ſlate, and is an eſſential part of ſienite and green-ſtone. It forms a conſtituent part of many baſaltic and volcanic rocks, but has frequently been confounded with augit. (See Volcanic *Products*.) Hornblende occurs abundantly in various parts of Scotland and in England, particularly at the Malvern-hills in Worceſterſhire, and at Charwood foreſt in Leiceſterſhire, and in Devonſhire, Cornwall, and Cumberland.

Baſaltic Hornblende, Amphibole ſchorlique baſaltique, Fr. is diſtinguiſhed from common hornblende by its velvet-black colour, and more perfect cryſtallization. It occurs cryſtallized in unequiangular ſix-ſided priſms, terminated at each extremely by a trihedral pyramid, with rhombic faces. It is ſometimes terminated diſſimilarly at each extremity, and ſometimes acuminated by four or more planes. The angles of the cleavage have been already deſcribed. Baſaltic hornblende has a ſplendent vitreous luſtre. The fracture is fine-grained, uneven, and gliſtening. It is black, opaque, and ſcratches glaſs. It is more frangible than common hornblende, and melts with greater difficulty. The ſpecific gravity is from 3.15 to 3.19. According to Klaproth, the conſtituent parts are,

Silex	47.00
Alumine	26.00
Lime	8.00
Magneſia	2.00
Oxyd of iron	15.00
Water	0.50
	98.50

It occurs imbedded in baſalt, as at Arthur's ſeat, near Edinburgh, and in various parts of Scotland. It is frequently found in lava, particularly in the lava of Veſuvius. It was formerly confounded with ſchorl, until Werner pointed out its characters.

Hornblende-Slate occurs in beds in granite, gneiſs, and mica-ſlate; in the latter rocks, it is often much intermixed with mica, and ſometimes contains garnets, as is the caſe near Tyndrum in Perthſhire. Its colour is greeniſh-black. It has in the maſs a ſlaty ſtructure, and is internally laminar or fibrous, and has a gliſtening or velvet-like luſtre. No very well characteriſed beds of hornblende-ſlate occur in England.

Horn-Mercury, *Mercure muriaté*, Haüy. See Mercury-*Ores*.

Horn-Silver, *Argent muriaté*, Haüy. See Silver-*Ores*.

Humite occurs at mount Somina near Naples, in a granular topaz rock, intermixed with brown and olive-green mica and white Haüyne. Its colour is reddiſh-brown; it occurs cryſtallized in octahedrons, which are always more or leſs truncated and bevelled; the planes are frequently tranſverſely ſtreaked; it has a ſhining luſtre, and is tranſparent; it ſcratches quartz with difficulty. This mineral was named humite in honour of ſir Abraham Hume, by the count de Bournon, who has given the preceding characters of it in his *Catalogue Mineralogique*.

Hyacinth, *Zircon hyacinth*. See Zircon.

Hyalite, *Muller glaſs*, Werner; *Quarz concretioné*, Haüy. (See Hyalite.) The ſpecific gravity of this mineral is given in the laſt edition of profeſſor Jameſon's Mineralogy at 2.47, from Karſten. Its conſtituent parts are given by Bucholz as under:

Silex	92
Water	6.33
Trace of alumine	
Loſs	1.66
	99.99

Hydrate *of Magneſia* has a white colour with a greeniſh tinge; it occurs maſſive, has a lamellar-bladed ſtructure, a pearly luſtre, and is more or leſs ſemitranſparent, but becomes

comes opaque by expofure to the air. The lamellæ are fomewhat elaftic; it is foft, and adheres flightly to the tongue. Specific gravity 2.3. It is infufible, but foluble in muriatic acid. According to Vauquelin, the conftituent parts are,

Magnefia - - - -	64
Water - - -	29
Oxyd of iron - - -	2.5
Silex - - - -	2
	97.5

HYDROPHANE. See OPAL, *Addenda*.

HYPERSTENE, *Labrador Hornblende; Diallage metalloide*, Haüy. Its colours are, dark-greyifh, brownifh, or greenifh-black, with generally a pfeudo-metallic luftre, reflecting a copper-red, a pinchbeck-brown, or a gold-yellow light. It occurs both maffive and diffeminated; it has a lamellar ftructure and a two-fold cleavage, the planes forming angles of 100° and of 80°. It is opaque, and yields a greenifh-white ftreak. It is harder than common hornblende. Its fpecific gravity is 3.38. Before the blow-pipe it blackens, but is infufible. According to Klaproth, the conftituent parts are,

Silex - - - -	54.25
Magnefia - - -	14.00
Alumine - - -	2.25
Oxyd of iron - - -	24.50
Lime - - -	1.50
Water - - -	1
Manganefe, a trace	
	97.50

Until very recently, this mineral had only been found on the coaft of Labrador, where it forms a conftituent part of a rock compofed of Labrador felfpar, and fometimes containing common hornblende and magnetic iron-ftone. It has been lately difcovered by Dr. Macculloch in fienite, at Lock Scavig in Skye, alfo near Portfoy, and is fuppofed to exift in many rocks which have hitherto been defignated green-ftones.

ICHTHYOPHTHALMITE, *Apoplylite*, Haüy. See ZEOLITE.

IDOCRASE, *Vefuvian*. See VESUVIAN.

INDIANITE, a mineral brought from the Carnatic, of which we have the following account by its difcoverer the count de Bournon. Its colours are white and grey, its luftre fhining; it has a lamellar ftructure, is tranflucent inclining to tranfparent; it fcratches glafs, but is lefs hard than felfpar; it occurs maffive, and is affociated with hornblende. Its fpecific gravity is 2.74. According to Chenevix, the conftituent parts are,

Silex - - - - -	42.5
Alumine - - -	37.5
Lime - - - - -	15
Iron - - - - -	3
A trace of Manganefe	
	98

INDICOLITE, Indigo blue, tourmaline. See TOURMALINE.

IOLITE, *Dichroite*, occurs principally cryftallized, in fmall equiangular and equilateral fix-fided prifms, which have rough furfaces. The colour is violet-blue, or dull pruffian blue, but when viewed by tranfmitted light at right angles to the axis of the prifm is a brownifh-yellow. The ftructure is indiftinctly lamellar, with joints paffing through the axis at right angles to the lateral faces of the prifm. The fracture is uneven, paffing into conchoidal. It paffes from tranflucent to opaque. Iolite fcratches quartz. Its fpecific gravity is 2.5. It is not affected by acids. Before the blow-pipe, it melts with difficulty into a greenifh-grey enamel. This mineral occurs at Cape de Gate, in Spain; it is found imbedded in fragments of gneifs and compact felfpar, contained in what is fuppofed by Cordier to be a volcanic tufa, which contains, befides blocks of fcoriæ, obfidian and bafalt. Iolite has alfo been found in trap at Arendal in Norway.

IRIDIUM, *Native*, has a pale fteel-grey colour; it occurs in flat fmall irregular grains in alluvial foil in South America. It has a fhining metallic luftre, a lamellar ftructure, is brittle and harder than platina. The fpecific gravity is 19.5. It is proved by Dr. Wollafton to be an alloy of *Irridium* and *Ofmium*; which fee.

IRON-CLAY is of a reddifh or brownifh-red; it occurs maffive and veficular, as the bafes of fome amygdaloids which form beds in bafaltic rocks. It is intermediate between bafalt and wacke, having lefs hardnefs than the former, and more than the latter. It is alfo more eafily frangible than either bafalt or wacke.

IRON-FLINT is generally of a brown or brownifh-red colour; it is opaque and hard, and has an imperfect conchoidal fracture. It occurs maffive in rounded pieces, and cryftallized in fmall equiangular fix-fided prifms. Its fpecific gravity is from 2.5 to 2.8. It is infufible. This mineral appears to be quartz rendered opaque by a chemical combination with iron. According to Bucholz, the conftituent parts are,

Silex - -	93 -	92
Oxyd of iron -	5 -	5.75
Volatile matter -	1 -	1
Oxyd of manganefe	-	1
	99	99.75

Pebbles of iron-flint are ufed at Worcefter for burnifhing the gilding in china. They have fometimes been found in confiderable quantities in the ploughed fields near Afhby-de-la-Zouch in Leicefterfhire.

IRON-MICA. Micaceous iron glance, or iron-ore. See IRON-ORES.

IRON, *Native*. See IRON-ORES.

IRON, *Native and Meteoric*, *Fer native meteorique*, Haüy, is the iron which has been obferved in various places to fall from the atmofphere. See STONE, *Meteoric*, FALLING *Stone*, and METEORIC *Iron*, *Addenda*.

IRON-ORE and *Iron-Stones*. (See IRON.) We fhall here enumerate the different fpecies of iron-ftone, with the names given to them by the French and German mineralogifts.

Iron Pyrites, Common; Fer fulphuré, Haüy; *Gemeiner fchwefelkies*, Werner. *Capillary Pyrites, Fer fulphuré capillaire*, Haüy; *Haarkies*, Werner. *Cellular Pyrites, Zellkies*, Werner. *Radiated Pyrites, Fer fulphuré radié*, Haüy; *Strahlkies*, Werner. *Hepatic*, or *Liver Pyrites, La pyrite hepatique*, Brochant; *Leberkies*, Werner. *Magnetic Pyrites, Fer fulphuré fernfere, ou magnetique*, Haüy; *Magnetkies*, Werner. *Foliated Magnetic Pyrites, Blathicher magnetkies*, Werner. For an account of thefe fpecies, fee PYRITES, and IRON-ORE.

IRON-STONE, *Magnetic, Common, Fer oxydulé*, Haüy; *Gemeiner*

Gemeiner magnetſtein, Werner. This ore is highly magnetic with polarity. According to Berzelius, it contains

Peroxyd of iron - - -	71.86
Protoxyd of iron - - -	28.14
	100

It occurs in various parts of the world, chiefly in primitive mountains; it is found at St. Juſt in Cornwall, and Taviſtock in Devonſhire.

Iron-ſand, or *Sandy Magnetic Iron-ſtone*, *Fer oxydulé titanifere*, Haüy, (ſee Iron-ore,) occurs in volcanic and baſaltic rocks, forming a component part of many black lavas, and in the ſands of rivers. According to Cordier, its conſtituent parts are,

Iron-ſand, Teneriffe.	
Oxyd of iron - - -	79.2
Oxyd of titanium - -	14.8
Oxyd of chrome, a trace -	
Oxyd of manganeſe - -	1.6
Silex and alumine - -	0.8
	96.4

According to Thompſon,

River Dee, Aberdeenſhire.	
Oxyd of iron - - -	85.3
Oxyd of titanium - -	9.5
Arſenic - - - -	1.0
Silex and alumine - -	1.5
	97.3

Earthy Magnetic Iron-ſtone; Fer oxydulé fuligineux, Haüy; *Ochriger magneteiſenſtein*, Werner.—The colour is blueiſh-black; it is opaque, ſoft, ſectile, and eaſily frangible. It appears to be common magnetic iron-ſtone in a ſtate of decompoſition. Common magnetic iron-ſtone and iron-ſand are diſtinguiſhed from iron-glance by the colour of the ſtreak, which is black; but that of iron-glance is red. According to Mr. Jameſon, Werner was the firſt who obſerved that magnetic iron-ſtone does not poſſeſs the magnetic property when at a depth in the earth, but it acquires it after expoſure to the atmoſphere.

Specular Iron-ore, or *Common Iron Glance; Fer oligiſte*, Haüy; *Eiſenglanz*, Werner.—This ore, according to different analyſes, appears to contain about 90 *per cent.* of oxyd of iron. See Iron-ores.

Scaly Red Iron-ore, or *Iron Froth; Fer oligiſte rouge luiſant*, Haüy; *Rother eiſenrahm. Ochry Red Iron-ſtone; Fer oxydé rouge groſſier; Ochriger rotherſenſtein*, Werner.

Compact Red Iron-ſtone; Fer oligiſte compacte, Haüy; *Dichter rotherſenſtein*, Werner.

Red Hematite, or *Fibrous Red Iron-ſtone; Fer oligiſte concretioné*, Haüy; *Rother glaſskopf*, Werner. See Iron-ores.

Scaly Brown Iron-ore; Brauner eiſenrahm, Werner. *Ochry Brown Iron-ſtone; Fer oxydé pulverulent*, Haüy. *Compact Brown Iron-ſtone; Fer oxydé brun compacte*, Fr.; *Dichter braun eiſenſtein*, Werner. *Brown Hematite; Fer oxydé hematite brun*, Haüy; *Brauner glaſskopf*, Werner. —Brown iron-ſtone is diſtinguiſhed from red iron-ſtone by its red ſtreak and inferior ſpecific gravity: it alſo contains more water, the brown iron-ſtone being an hydrate. This ore, according to profeſſor Jameſon, makes but indifferent caſt-iron, but affords good malleable iron and excellent ſteel. See Iron-ore.

Compact Black Iron-ſtone; Dichter ſwarzeiſſenſtein. Black hematite; Mine de fer noire compacte, Fr.; *Schwarzer glaſskopf*, Werner.—When melted with borax before the blow-pipe, it yields a violet-blue glaſs; hence it is conjectured to contain much manganeſe.

Sparry Iron-ſtone; Chaux carbonatée ferrifere aver manganeſe, Haüy.

Clay Iron-ſtone; Fer oxydé maſſif, Haüy; *Thoneiſonſtein*, Werner. See Iron-ore, and Clay *Iron-ſtone, Addenda.*

Reddle; *Argile ocreuſe rouge graphique*, Haüy; *Roëthel*, Werner.

Columnar Clay Iron-ſtone; Fer argilleux bacillaire, Fr.

Lenticular Clay Iron-ſtone; *Fer oxydé brun granuleux ou lenticulaire*, Fr. (See Iron-ore.)—The following analyſis of this ore is given by Daubuiſſon, Journal des Mines, 1810.

Peroxyd of iron - - -	73
Water - - - - - -	14
Silex - - - - - -	9
Peroxyd of manganeſe - -	1
Loſs - - - - - -	3
	100

Jaſpery Clay Iron-ſtone. See Iron-ore.

Reniform Clay Iron-ſtone; Fer oxydé geodique, Haüy.—The conſtituent parts of this ore are ſtated by Daubuiſſon.

Peroxyd of iron -	76	78
Water - - -	14	13
Silex - - -	5	7
Oxyd of manganeſe	2	a trace
Alumine - - -	0	1
	97	99

See Iron-ore.

Pea-ore, or Piſeform Iron-ore; Fer oxydé globuliforme, Haüy; *Bohnerz*, Werner. See Iron-ore.

Bog Iron-ore. See Iron-ore, and Bog *Iron-ore, Addenda.*

Pitchy Iron-ore; Fer oxydé reſinite.—The pitchy iron deſcribed under the article Iron-ores appears to be a phoſphate of iron: later mineralogiſts deſcribe it as an oxyd and ſulphate of iron. It is a rare ore, having been found only in one mine near Freyberg, and in the diſtrict of Pliſs in Upper Sileſia. Its colour is greyiſh-black, paſſing into dark liver-brown. It is ſaid to occur forming cruſts. It has a ſplendent or ſhining reſinous luſtre. The fracture is imperfectly conchoidal: it is compoſed of granular diſtinct concretions: it is tranſlucent on the edges: the ſtreak is lemon-yellow: it is ſoft. When placed in water, it becomes ſemitranſparent and vitreous. According to Klaproth, its conſtituent parts are,

Oxyd of iron - - -	67
Sulphuric acid - - -	8
Water - - - - - -	20
	95

Blue Iron-ore; Blue Iron Earth; Fer phoſphaté terreux, Haüy.

Haüy. (See Iron-ore.) According to Klaproth, this ore contains,

Oxyd of iron - - -	47·50
Phosphoric acid - - -	32·0
Water - - - -	20
	99·5

Chromate of Iron. See Chrome, and Chromate *of Iron*, *Addenda*.

Cube Ore. See Ores *of Iron*.

Muriate of Iron, Native, or *Pyroſlamite, Fer muriaté*, Fr. has a liver-brown colour, inclining to piſtachio-green. It occurs cryſtallized in ſhort ſix-ſided priſms. The terminal planes of the cryſtals are ſhining and pearly, the lateral planes, when clear, are ſhining and vitreous. It has a foliated ſtructure and four-fold cleavage, the moſt diſtinct of which is parallel with the terminal planes. It is tranſlucent on the edges, and yields a browniſh-white ſtreak. Its ſpecific gravity is 3·08. It is inſoluble in water, but ſoluble in muriatic acid, except a ſmall reſiduum of ſiliceous earth. Before the blow-pipe, it gives out copious fumes of oxy-muriatic acid. This is a very rare ore of iron.

The following table of the annual quantity of iron raiſed and ſmelted in different parts of Europe, is extracted from the ſecond edition of Jameſon's Mineralogy, vol. ii. p. 314.

Quintals of 100 Pounds each.

Great Britain - - -	5,000,000
France - - - - -	4,500,000
Ruſſia - - - - -	1,075,679
Sweden - - - -	1,500,000
Auſtria - - - -	1,010,400
Pruſſia, after the treaty of Tilſit	322,053
Kingdom of Weſtphalia in 1808	187,411
Spain - - - - - -	180,000
Daniſh ſtates - - - -	135,000
Bavaria and the Tyrol - -	110,000
Kingdom of Saxony - -	80,000

The United States of America, without including Louiſiana and the Indiana territory, are ſaid to yield 480,000 quintals, and, according to Dr. Bruce, the value of the iron and manufactured articles of iron in the United States is from twelve to fifteen millions of dollars. The annual importation, including bar-iron and every article of iron or ſteel, is eſtimated at four millions.

Iridium, an alloy of iridium with oſmium. See Osmium, *Addenda*.

Iserine. See Titanium.

Jade, *Jade-Nephrite*, Fr. See Nephrite, *Addenda*.

Jasper. (See Jasper.) In that article it is ſtated, that common jaſper is excluſively found in veins: this is not ſtrictly correct, for jaſper occurs in irregular beds and maſſes in the argillaceous ſchiſtus, which covers the granite of the Grampian-hills in Kincardineſhire. Jaſper occurs in ſome of the beds of manganeſe near Exeter.

Jenite. See Yenite.

Jet *Pitch-coal, Jayet*, Fr., has a black colour, and yields a browniſh-black ſtreak. It occurs maſſive, and in the ſhape of branches. Jet has a ligneous ſtructure. The fracture is large and perfect conchoidal, with a ſhining reſinous luſtre. It becomes electric by friction, and burns with a greeniſh flame and bituminous odour. Jet, according to the experiments of Dr. Macculloch, contains vegetable extract on diſtillation; but when heated under compreſſion, it is converted into true mineral coal. For ſome account of the localities of jet, ſee Jet.

Kaolin. See Porcelain *Earth*, *Addenda*.

Kyanite, or *Cyanite; Diſthené*, Haüy; *Sappare*, Sauſſure. Its colours are blueiſh, or grey ſky-blue, and pale blueiſh-green. The white varieties are partially ſhaded with blue. It occurs cryſtallized and maſſive. The form of the cryſtals are an oblique four-ſided priſm, with two oppoſite broad, and two oppoſite narrow planes. This is the primitive cryſtal. It occurs alſo truncated on the two oppoſite acute lateral edges, forming an hexahedral priſm; ſometimes all the lateral edges are truncated; and ſometimes two priſms are joined by their broader lateral planes, forming a twin cryſtal. The narrow lateral planes are longitudinally ſtreaked. The luſtre is ſhining and pearly, and that of the broad planes is ſometimes ſplendent. Kyanite has a lamellar ſtructure, with a cleavage parallel to the planes of an oblique tetrahedral priſm; that parallel with the broad lateral planes is the moſt diſtinct. The ſtructure of amorphous kyanite is more or leſs curvedly lamellar, paſſing into bladed. It is tranſlucent or tranſparent; it ſcratches glaſs, and is eaſily frangible. The ſpecific gravity is 3·47 to 3·51. Some of the cryſtals become poſitively electric, others negative; hence the name diſthene was given to it by Haüy, on account of its double electrical powers. It is infuſible before the blow-pipe. According to Klaproth, its conſtituent parts are,

Alumine - - - -	55·5
Silex - - - -	43
Oxyd of iron - - -	0·5
	99·0

According to Langier,

Alumine - - - -	55·30
Silex - - - -	38·50
Lime - - - -	0·50
Oxyd of iron - - -	2·75
	97·05

It occurs in primitive mountains, in mica-ſlate, talc-ſlate, and white-ſtone. It has been found at Boharn, in Bamfſhire, and Bamhory, Aberdeenſhire. In India it is cut and poliſhed, and ſold as an inferior kind of ſapphire. Sometimes cryſtals of kyanite may be ſeen joined and intermixed with grenolite, (ſee Grenolite,) which ſhews the near alliance of theſe minerals, which have alſo nearly the ſame chemical compoſition.

Labrador *Felſpar*. See Felspar.

Labrador *Hornblende*. See Hypersteне, *Addenda*.

Lapis-Lazuli. See Lazuli.

Latialite. See Haüyne, *Addenda*.

Laumonite. See Zeolite.

Lazmestone. See Lazuli.

Lazulite. See Lazulite.

Lead-Ores. (See Lead, where eleven ſpecies of lead-ore are deſcribed.) The antimonial lead-ore is called the triple ſulphuret of lead. Four other ſpecies of lead-ores have ſince been deſcribed; cobaltic lead-ore, native minium, arſeniate of lead, and muriate of lead.

Cobaltic Lead-ore has a freſh lead-grey colour, and a ſhining metallic luſtre. It occurs minutely diſſeminated, and

and in extremely minute cryſtals, aggregated like moſs; it is opaque, ſoft, and ſectile. Before the blow-pipe it ſplits into ſmall pieces, and communicates a ſmall blue colour to borax.

Native Minium; Plomb oxydé rouge, Haüy.—It has a ſcarlet-red colour. It occurs maſſive and pulverulent; when examined with a lens, it exhibits a cryſtalline ſtructure, like galena, in which it is generally found. Before the blow-pipe, on charcoal it is firſt converted into litharge, and then into metallic lead. This mineral is probably produced by the decompoſition of galena, which it incruſts. It has been found at Graſſington, and other parts of Craven, in Yorkſhire.

Muriate of Lead, or Corneous Lead-Ore.—Its colours are greyiſh or yellowiſh-white, paſſing into wine-yellow. It occurs cryſtallized in cuboidal priſms, either ſimple, or terminated by tetrahedral pyramids, or bevelled on the edges. It exhibits a lamellar ſtructure, with joints in three directions parallel to the faces of a cuboidal priſm; the croſs fracture is conchoidal; it has a ſplendent adamantine luſtre; is more or leſs tranſparent. It is very ſoft and frangible. On expoſure to the blow-pipe, on charcoal it melts into an orange-coloured globule, and appears reticular externally, and of a white colour when ſolid; if melted again, it becomes white; and on increaſe of the heat the acid flies off, and minute globules of lead remain. According to Klaproth, its conſtituent parts are,

Oxyd of lead - - -	85.5
Muriatic acid - - -	8.5
Carbonic acid and water -	6
	100

Arſeniate of Lead, or *Reniform Arſeniate of Lead; Plomb arſenié compacte*, Haüy.—Its colours in the freſh fracture are reddiſh-brown and browniſh-red; externally ochre-yellow and ſtraw-yellow; internally the luſtre is ſhining and reſinous; the fracture is conchoidal, inclining to uneven; it is opaque, ſoft, and brittle. The ſpecific gravity is 3.93. This ore has hitherto been found only in one mine near Nertchinſk, in Siberia. It occurs in reniform and tuberous maſſes; it is inſoluble in water. Before the blow-pipe, on charcoal it gives out arſenical vapours, and is more or leſs perfectly reduced. Its conſtituent parts are,

Oxyd of lead - - -	35
Arſenic acid - - -	25
Water - - - -	10
Oxyd of iron - - -	14
Silver - - - -	2.5
Silex - - - -	7
Alumine - - - -	2
	95.5

Filamentous Arſeniate of Lead, Plomb arſenié filamentena, Haüy, occurs cryſtallized in ſmall acicular priſms, or in delicate ſilky filaments, at St. Foix, in the department of Saône and Loire, in France.

Earthy Arſeniate of Lead occurs in cruſts, in the ſame mine with the filamentous. Its colour is yellow; it has an earthy fracture; is ſoft and friable. This ore has alſo been found aſſociated with white lead-ore, copper-ores, and quartz, in the hill of Horpie, in Oiſans.

Indurated Earthy Lead-Ore, Plomb carbonatée teneuz, Fr. deſcribed as lead-earth under the article Lead-Ores, has been analyſed by John. Its conſtituent parts are,

Oxyd of lead - - -	66
Carbonic acid - - -	12
Water - - - -	2.25
Silex - - - -	10.50
Alumine - - - -	4.75
Iron and oxyd of mangane ſe	2.25
	97.75

This ore occurs in conſiderable quantities in ſome of the mines in Craven, in Yorkſhire, and is ſmelted as a rich ore of lead.

Conchoidal Phoſphate of Lead contains a ſmall portion of arſenic and muriatic acid. It differs from green lead-ore, deſcribed under the article Lead-Ore. When cryſtallized, the planes of the cryſtals are generally convex. It occurs alſo ſtalactitic, reniform, and botryoidal. The colour is orange-yellow, paſſing into lemon-yellow and red; the fracture is conchoidal; it is tranſlucent; internally the luſtre is ſhining and reſinous. Its ſpecific gravity is 7.26. According to Langier, its conſtituent parts are,

Oxyd of lead - - -	76.8
Phoſphoric acid - - -	9
Arſenic acid - - -	4
Muriatic acid - - -	7
Water - - - -	1.5
	98.3

According to Roſe,

Oxyd of lead - - -	77.5
Phoſphoric acid - - -	7.5
Arſenic acid - - -	12.5
Muriatic acid - - -	1.5
	99

This ore has been found in Huel Unity mine, Cornwall.

The greateſt quantity of lead is raiſed in England of any country in Europe. The following table contains the annual amount of lead in quintals from the following countries:

	Lead in Quintals.
Great Britain - -	250,000
France - - - - -	60,000
Weſtphalia in 1809 - -	59,771
Auſtrian dominions -	45.809
Spain - - - - -	32,000
Pruſſia, after the treaty of Tilſit	12,992
Saxony in 1808 - -	10,000
Ruſſia - - - - -	10,000
Bavaria and the Tyrol -	400
	480,972

Leelite, a mineral very recently diſcovered at Gryphyla, in Sweden, of which we have only the following deſcription. It has a red colour, the luſtre and tranſparency

parency of horn, and the hardnefs of flint. The fpecific gravity is 2.71. Its conftituent parts are,

Silex - - - -	75
Alumine - - - -	22
Manganefe - - -	2.50
Water - - - -	.50
	100

Lepidolite. (See Lepidolite.) When that article was written, it was fuppofed that this mineral was exclufively found on Mount Hradifco, in Moravia. Lepidolite has fince been difcovered in Saxony, Sweden, Norway, France, the Ifland of Elba, and in feveral parts of Scotland, particularly in lime-ftone, near Dalmally, in a flate-quarry at Ballachulifh, at the head of Loch Fyne, and at Glentilt in Perthfhire.

Leucite, *Amphigene*, Haüy. See Leucite.

Lieocite, or *Yenite*. See Yenite.

Lime-stone. See Lime-stone and Geology, *Addenda*.

Lithomarge, *Friable*. (See Lithomarge.) This variety is characterifed by its fcaly particles foiling, and low degree of coherence. According to Klaproth, it contains

Silex - - - -	32.
Alumine - - -	26.50
Iron - - - -	21.
Muriate of foda - - -	1.50
Water - - - -	17.
	98

Lithomarge, *Indurated; Argil lithomarge*, Haüy. (See Lithomarge.) This variety occurs in veins in porphyry, gneifs, grey wacke, and ferpentine, and in drufy cavities in bafaltic rocks. It is intermediate between fteatite and variegated clay, and appears fometimes to pafs into meerfchaum.

Lydian-*Stone*. See Flinty *Slate*, and Horn-stone, *Addenda*.

Lythrodes, a mineral difcovered in Norway, which appears allied to elaolite, and was called lythrodes by Karften, becaufe when firft broken it appears as if fpotted with coagulated blood. Its colour is aurora-red, paffing into brownifh-red or brown; it is occafionally marked with cream-yellow and greenifh fpots. It occurs maffive and diffeminated; it has an imperfect foliated ftructure. The luftre of the furface is refinous and glimmering. The crofs fracture is fplintery and dull: it is feebly tranflucent on the edges; it is hard. The fpecific gravity is 2.5. According to John, the conftituent parts are,

Silex - - - -	44.62
Alumine - - -	37.36
Lime - - - -	2.75
Soda - - - -	8.00
Water - - - -	6.
Oxyd of iron - - -	1.
	99.73

Macle, a name given by the French mineralogifts to chiaftolite or *Hollow fpar;* which fee.

Madreposite, a variety of black lime-ftone, fo called on account of its occurring in radiated or diverging prifmatic concretions, which are fuppofed to refemble the ftars of madrepores: it has a minute and indiftinctly curvedly lamellar ftructure. When rubbed, it emits a ftrong fmell of fulphuretted hydrogen gas. Patron fufpects that this mineral is fafciculated arragonite. According to Klaproth, it confifts of

Carbonate of lime - -	93.
Carbonate of magnefia -	0.50
Carbonate of iron - -	1.25
Carbon - - -	0.50
Siliceous fand - -	4.50
	99.75

Other analyfes give a fmall portion of fulphur and manganefe.

Magnesian *Lime-ftone*, or *Compact Dolomite*, has generally a yellowifh-brown or yellowifh-grey colour, a granular ftructure, a glimmering or gliftening luftre, and diffolves flowly in acids; thefe characters diftinguifh it from common lime-ftone. The fpecific gravity is about 2.8. It contains fewer petrifactions than moft common lime-ftones. It occurs in regular ftrata on the eaftern fide of England from Nottinghamfhire to Sunderland. It occurs alfo in amorphous maffes, and varioufly contorted beds, and alfo forming a kind of lime-ftone breccia in the red marle. According to Tennant, its conftituent parts are,

	Yorkfhire.
Lime - - - - -	30
Magnefia - - - -	20
Carbonic acid - - - -	47
Alumine - - - -	1
	98

According to Thomfon,

	Near Sunderland.
Carbonate of lime - -	56.80
Carbonate of magnefia -	40.84
Carbonate of iron - -	0.36
Infoluble matter - -	2.
	100

Magnesite, *Magnefia carbonatée*, Haüy. It occurs in amorphous maffes and tuberous fpongiform. The fracture is fplintery and large, and flat conchoidal. It is opaque, earthy. The colour is yellowifh-grey or white, with fpots and dendritic delineations of blackifh-brown. Magnefite yields to the nail externally, but internally it is harder than calcareous fpar; it feels fomewhat meagre, adheres to the tongue, and abforbs from nine to ten *per cent.* of water when immerfed in it, and becomes femi-tranfparent on the edges. It is flowly foluble with effervefcence in concentrated muriatic acid. Before the blow-pipe it is infufible, but becomes fufficiently hard to fcratch glafs. Its fpecific gravity is 2.88. According to Bucholz, the conftituent parts are,

Magnefia - -	45.52	to	48
Carbonic acid - -	47.00	to	52
Silex - - -	4.50		——
Alumine - -	0.50		a trace
Manganefe - -	0.50		a trace
Lime - - -	0.08		a trace
Water - - -	2.		
	100.10		100

It

It is found in ſerpentine in Moravia, along with meerſchaum and earthy talc. It is diſtinguiſhed from meerſchaum by its colour, external ſhape, fracture, meagre feel, and weight.

MAGNETIC *Iron-Stone*, and *Magnetic Pyrites*. See IRON-*Stone*, and PYRITES.

MALACHITE. See COPPER-*Ores*.

MANGANESE-*Ores*. See MANGANESE and WADD.

MARL. See MARLE.

MEERSCHAUM. (See MEERSCHAUM.) This mineral, of which an account is given under the article, appears to be hydrate of magneſia combined with ſilex; it is ſtated by Mr. Jameſon to be fuſible on the edges into a white enamel. It occurs in veins in the ſerpentine of Cornwall. In Natolia it occurs in beds under the ſoil, and from 600 to 700 men are employed in digging it. When firſt raiſed, it is ſoft and greaſy, and lathers with water like ſoap; hence it is uſed by the Tartars for waſhing. Meerſchaum is extenſively manufactured in Turkey into tobacco-pipes, which are boiled in oil or wax; afterwards they are baked, and then poliſhed.

MEIONITE. See MEIONITE.

MELANITE, *Grenat noire*, Haüy. See GARNET.

MELLITE and MELLILITE, *Honey-Stone*. See MELLITE.

MENACHANITE. See TITANIUM.

MENILITE, *Quarz reſinite ſubluiſante brunatre*, Haüy. See MENILITE.

MERCURY-*Ores*. See MERCURY, and CINNABAR, *Addenda*.

MESOTYPE. See ZEOLITE.

METEORIC, *Native Iron; Fer natif meteorique*, Haüy. The colour is pale ſteel-grey, which inclines to ſilver-white, like platina; it is generally covered with a thin brown cruſt of oxyd of iron; it occurs in racemoſe or globular maſſes, and alſo minutely diſſeminated in meteoric ſtones. (See STONE, *Meteoric*.) The external ſurface is ſmooth and glimmering; the internal glimmering or gliſtening with a metallic luſtre: it yields a ſplendent ſtreak, and is malleable and flexible, but not elaſtic. The ſpecific gravity of meteoric iron is from 6.48 to 7.57: it is magnetic. According to Mr. Howard, the conſtituent parts are,

Iron	96.5	96.75
Nickel	3.5	3.25

All the meteoric iron which has yet been examined contains a portion of nickel; the latter metal is alſo found in moſt of the meteoric ſtones. The phenomena attending the deſcent of meteoric iron are preciſely ſimilar to thoſe which accompany the fall of meteoric ſtones. In moſt inſtances, loud detonations and brilliant light or fire-balls have preceded the fall. Theſe fire-balls appear to be the metallic or mineral matter in a ſtate of vivid ignition. Pliny mentions the fall of a maſs of ſpongy iron from the atmoſphere in Lucania fifty-ſix years before the Chriſtian era. Avicenna mentions a maſs of iron weighing fifty pounds, which fell from the air near Lurgea; and Averrhoes ſays, a maſs of iron weighing one hundred pounds fell at Cordova in Spain. In the year 1164, a ſhower of iron fell in Miſnia. (Georg. Fabri. Rer. Miſnia, lib. i. p. 32.) In the year 1552 fire-ſtone or maſſes of iron fell near Miſkos, in Tranſylvania. And among numerous other inſtances in the year 1751, a fire-ball burſt with a loud exploſion in the biſhopric of Agram, in Croatia: two maſſes of iron fell from it; the one, which weighed ſeventy-two pounds, ſunk a conſiderable depth into the earth; and the other, which was ſixteen pounds, fell on the ſurface of a meadow, at the diſtance of 2000 paces from the former; the larger is ſtill preſerved in the Imperial cabinet of Vienna.

Numerous maſſes of native iron occur in various parts of the world, which agree in external appearance and chemical compoſition with thoſe whoſe deſcent from the air is well atteſted. Profeſſor Pallas diſcovered a maſs of native iron, weighing about 1600 pounds, on the ſurface of a hill between Kraſnojark and Abakunſk, in Siberia. It is conſidered as a holy relic by the natives, who believe that it fell from heaven.

Several maſſes of native iron have been met with in Mexico; and many years ſince, a maſs of native iron, calculated to weigh about thirty tons, was diſcovered in the diſtrict of St. Jago de Eſtro, in South America. It lies in the middle of a great plain, where no rock or mountain is within an hundred miles of it. According to Howard, it conſiſts of 90 parts of iron, and 10 of nickel. Similar maſſes have been found in Africa, North America, and the Eaſt Indies.

MICA. See MICA.

MIEMITE, *Granular*, is a variety of magneſian lime-ſtone, firſt found at Miemo in Tuſcany: it has a light green or greeniſh-white colour; it occurs maſſive and cryſtallized, in ſmall flat double three-ſided pyramids, in which the lateral planes of one pyramid are ſet on the lateral edges of the other; the cryſtals are often joined by the edges, or interſect each other. It is tranſlucent, and has internally a ſplendent and pearly luſtre. The ſtructure is curvedly lamellar. Its ſpecific gravity is 2.88: it diſſolves ſlowly in acids. The conſtituent parts are,

Carbonate of lime	53
Carbonate of magneſia	42
Carbonate of iron and mangancſe	3
	98

Priſmatic Miemite occurs in low, ſmall, three-ſided pyramids, deeply truncated on the edges; it appears to contain leſs magneſia than the preceding.

MILK *Quartz*, or *Roſe Quartz*. See QUARTZ.

MINERAL *Caoutchouc*, or *Elaſtic Bitumen*. (See BITUMEN.) This ſingular mineral has been hitherto only found in the Odin mine, near Caſtleton in Derbyſhire. According to the analyſis of Klaproth, it contains in 100 grains,

	Cubic Inches.
Carbonated hydrogen	38
Carbonic acid	4
	Grains.
Bituminous oil	73
Acid water	1.50
Carbon	6.23
Lime	1.50
Silex	.75
Sulphate of lime	.50
Alumine	.25

MINERAL *Oil*. See PETROLEUM.

MINERAL *Pitch, Earthy*, or *Maltha*. See BITUMEN.

MINERAL *Pitch, Slaggy*, or *Aſphaltum*. See BITUMEN.

MISPICEL, *Arſenical Pyrites*. See ARSENIC, and PYRITES.

MOLYBDENA, or *Sulphuret of Molybdena; Molybdene ſulphurée*, Haüy; is of a bright lead-grey colour. It occurs maſſive, diſſeminated in plates, and cryſtallized. The form of the cryſtals is a regular ſix-ſided table, or a very ſhort ſix-ſided fided prifm, terminated by two low fix-fided pyramids. The luftre is metallic and fhining. The ftructure is lamellar, with a fingle cleavage parallel with the lateral planes of the table. It is fectile and fomewhat flexible, but not elaftic. Molybdena is unctuous to the touch, and leaves a mark on paper like plumbago, but on white porcelain it makes a greenifh mark. Its fpecific gravity is from 4.5 to 4.7. Before the blow-pipe it gives out a fulphureous odour, and when urged by the utmoft force, it yields a white vapour, and a pale blue flame; in carbonate of foda, it is foluble with violent effervefcence. The characters here given, particularly its mark on china, ferve to diftinguifh molybdena from graphite and plumbago. (See Molybdenum, and Sulphur.) According to Bucholz, its conftituent parts are,

Molybdenum	- -	60
Sulphur	- - -	40
		100

This mineral occurs in fome parts of Scotland, and in granite at Coldbeck-fell in Cumberland. It is found alfo at Huel-Gorland, Cornwall.

Molybdena *Ochre* is a yellow colour, paffing into yellowifh-green; it is friable and dull, and occurs incrufting molybdena, on which it is doubtlefs formed by the decompofition of the latter mineral.

Moon-stone, a variety of adularia. See Adularia, and Felspar.

Morass-*Ore*. See Bog *Iron-Ore*.

Mountain *Cork*, or *Mountain Leather; Afbefte treffe*, Haüy. It is fometimes called mountain flefh and mountain pader. It occurs in thin flexible plates like leather, or in thicker and lefs flexible pieces like cork-wood. The colours are yellowifh and greyifh-white; it yields to the nail, is meagre to the touch, and fo light as to fwim on water. The ftructure is finely and promifcuoufly fibrous. According to Bergmann, its conftituent parts are,

Silex	- - -	56.2
Magnefia	- -	26.1
Alumine	- -	2
Lime	- -	12.7
Oxyd of iron	-	3
		100

Mountain, or *Rock Wood*, or *Ligniform Afbeftus; Afbefte ligniforme*, Haüy; has a wood-brown colour, and a curved and fibrous ftructure refembling wood. It is foft, opaque, and fectile; it is flightly flexible; it feels meagre. According to Jamefon, it is infufible; it is claffed by him in the talc family.

Muller *Glafs*. See Hyalite.

Muriate *of Ammonia*, *Native*, is a frequent product of volcanoes. See Ammonia.

Muriate *of Copper*. See Copper-*Ores*.

Muriate *of Lead*, or *Corneous Lead-Ore*. See Lead-*Ore*.

Muriate *of Soda*. See Rock-*Salt* and Salt.

Muscovy *Glafs*, the large plates of mica, which are generally brought from Siberia. (See Mica.) Thefe plates are erroneoufly called talc

Mussite, a variety of Diopside; which fee.

Naphtha, *Bitume liquide blanchatre*, Haüy. See Bitumen.

Natrolite. See Natrolite, and Zeolite.

Natron, *Soude carbonatée*, Fr. Native carbonate of foda is depofited on the fides of lakes, or on the furface of the ground, and generally containing muriate and fulphate of foda. See Soda.

Radiated Natron, *Soude carbonatée aciculaire*, Fr. occurs in Africa, and forms a confiderable article of commerce. This variety is nearly pure carbonate of foda, containing, according to Klaproth,

Water of cryftallization		22.50
Carbonic acid	-	38
Pure foda	- -	37
Sulphate of foda	-	2.50
		100

Nepheline, or *Sommite.* (See Sommite.) This mineral occurs in the lava of Vefuvius, and bears a near refemblance to Meionite (which fee). Nepheline is cryftallized in fix-fided prifms or tables, but the cryftals of meionite are four-fided prifms. The latter mineral is eafily fufible, but nepheline melts with difficulty. Nepheline has a four-fold cleavage, three of which are parallel with the lateral planes, and one to the terminal planes of the prifm. Tranfparent pieces of nepheline become cloudy in nitric acid; hence it was named by Haüy from the Greek word *νεφελη*, *a cloud.*

Nephrite, or *Jade; Jade nephritique*, Haüy. The colour is leek-green, paffing to greyifh-green; it occurs maffive. The fracture is uneven and fplintery, with a glimmering and fomewhat greafy luftre; it is tranflucent. Nephrite yields to the knife, but fcratches glafs; it has a greafy feel, is very tough. The fpecific gravity is from 2.9 to 3. Before the blow-pipe, it melts into a white enamel. According to Kaftner, its conftituent parts are,

Silex	- - -	50
Alumine	- -	10
Magnefia	- -	31
Iron	- - -	5.50
Chrome	- -	0.05
Water	- -	2.75
		99.30

Nephrite occurs in granite veins in the Hartz in Saxony; the moft beautiful varieties are from Perfia and Egypt. In Turkey it is cut into handles for fabres and daggers. It was formerly believed that this ftone had the property of relieving nephritic complaints; hence it has been called nephritic ftone. A flaty kind of nephrite is ufed by the inhabitants of New Zealand for hatchets, and hence has been called axe-ftone. Nephrite is nearly allied to ferpentine and fteatite; there is alfo a kind of nephrite which is more nearly allied to felfpar, and is claffed by Mr. Jamefon with the felfpar family; it is called fauffurite, after the celebrated geologift Sauffure, by whom it was firft difcovered. See Saussurite, *Addenda.*

Nickel-*Ores* are, *native nickel*, *copper nickel*, and *nickel ochre*.

Native Nickel has only been found hitherto in the Adolphus mine at Johanngeorgenftadt in Saxony, and at Joachimftal in Bohemia. Its colour is bronze-yellow, but is frequently tarnifhed greenifh-grey, or fteel or lead-grey, and occafionally invefted with a cruft of brown iron-ftone. It occurs in capillary cryftals, which are either promifcuoufly or fcopiformly aggregated. Internally the luftre is fplendent and metallic, externally fhining or fplendent when untarnifhed.

untarnifhed. The crofs fracture is even paffing into flat conchoidal; it is eafily frangible, and rather hard; it is more or lefs flexible and elaftic. Before the blow-pipe, on charcoal it melts into a metallic globule, without any fmell of arfenic or fulphur, which ferves to diftinguifh it from capillary pyrites. Native nickel contains the metal nickel with a minute portion of cobalt. See NICKEL.

Copper Nickel, Nickel arfenical, Haüy, has a copper or crimfon colour, of different degrees of intenfity, and often tarnifhed grey or black. It occurs maffive and diffeminated, and fometimes reticulated, botryoidal, or dendritical, and very rarely cryftallized in fix-fided tables; it has a fhining metallic luftre. The fracture is imperfectly conchoidal, paffing into granular and uneven. It is ufually compact, but fometimes occurs in granular diftinct concretions. It yields with difficulty to the knife, and is difficultly frangible. Its fpecific gravity is from 6.6 to 7.5. Before the blow-pipe it gives out an arfenical vapour, and then fufes with difficulty into a dark fcoria, mixed with metallic grains: it is foluble in nitromuriatic acid, forming a dark green liquor, from which cauftic alkali throws down a pale green precipitate, which diftinguifhes it from copper; the precipitate of the latter is a dark brown. This ore is a compound of nickel and arfenic; it occurs in fmall quantities in the lead-mines of Lead-hills and Wanlockhead, in Scotland, and in various parts of the continent of Europe, generally in veins in primitive mountains: it nearly refembles native copper, but may be diftinguifhed by its brittlenefs.

Black Nickel-Ore has a greyifh or brownifh-black colour; it occurs maffive, diffeminated, and in crufts; it is dull, has an earthy fracture, but becomes refinous and fhining in the ftreak; it foils flightly. In nitric acid it forms an apple-green folution, which lets fall a precipitate of white arfenic. It is rather a rare mineral, and is found in veins with other ores of nickel, and is fuppofed to be formed by the decompofition of copper nickel.

Nickle Ochre, Nickel oxydé, Haüy, has an apple-green colour, but on expofure to the air becomes greenifh-white: it is generally found as a thin coat or cruft, and feldom maffive or diffeminated; it is in loofe powder or friable, meagre to the touch, and light. It is infufible before the blowpipe, but with borax it forms a red colour; in cold nitric acid it remains infoluble. This ore occurs at Lead-hills and Wanlockhead, in Scotland, and in Saxony and France.

NIGRINE. See TITANIUM.

NITRE, *Native, Potaffe nitratée*, Fr. occurs in flakes, crufts, and capillary cryftals on the furface of the ground. In many countries, it appears to form at certain feafons of the year. It abounds in many of the plains of Spain, Hungary, the Ukraine and Podalia, and on the walls and floors of chalk caves in France. It is very abundant in India, Egypt, and in fome parts of North and South America. See POTASH, *Nitrate of*.

OBSIDIAN, or *Volcanic Glafs; Lava vitreufe obfidienne*, Haüy. (See OBSIDIANUS LAPIS.) This mineral bears fo clofe a refemblance to dark-green bottle-glafs as fcarcely to be diftinguifhed from it. Its moft common colours are dark-grey or greenifh, or brownifh-black; it has a vitreous and fhining or fplendent luftre; the fracture is large and perfectly conchoidal. It paffes from tranfparent to nearly opaque, according to the intenfity of the colour; it fcratches glafs, but is eafily frangible. The fpecific gravity varies from 2.34 to 2.38. The black obfidian of Iceland is faid to melt into a pale afh-grey veficular glafs on charcoal; that of Spanifh America loft its black colour when expofed to heat, became white, fpongy, and fibrous, and increafed to feven or eight times its original bulk; hence it appears that fome gafeous fubftance efcapes. Humboldt conjectures, that the gas evolved during the volcanic fufion of obfidian in the interior of the earth, may give rife to the earthquakes that agitate the Cordilleras. According to Abilgaard, the conftituent parts of obfidian are given as under:

Obfidian of Iceland.

Silex - - - - - -	74
Alumine - - - - -	2
Oxyd of iron - - -	14
Lofs, fuppofed to be potafh or foda	10
	100

According to Collet Defcotils,

America.

Silex - - - - -	72.0
Alumine - - - - -	12.5
Manganefe - - -	2.0
Potafh and foda - -	10.0
	96.5

Some analyfes give 1.6 lime, and only 5 of potafh and foda.

Obfidian is found in a great many volcanic countries, and alfo in various parts of the world, where no volcanic fires have exifted fince the hiftory of man. For a long period it was contended by Werner and his followers, that this mineral was of aqueous origin, but the appearance of obfidian, and the fituations in which it occurs, offer decifive proofs of its formation by fire. The mountain de la Caftagna, in Lipari, according to Spallanzani, is wholly compofed of it, which appears to have flowed in fucceffive currents, like ftreams of water falling with a rapid defcent and fuddenly frozen. The obfidian is fometimes compact and fometimes porous and fpongy. On the fouth fide of the Peak of Teneriffe, there is a ftream of obfidian feveral miles in length. In the ifland of Felicuda, a current of lava intermixed with obfidian may be traced to the very crater of a volcano. Obfidian appears to be lava fuddenly cooled, as it is well known, fince the experiments of Mr. Keir, Mr. Watt, and fir James Hall, that lava or bafalt cooled fuddenly forms black glafs; and we have a fpecimen of lava from Vefuvius, which flowed in the year 1818, one part of which is compact black lava, the other is a vitreous fubftance paffing from pitch-ftone to obfidian. See VOLCANIC *Products*.

OCTAHEDRITE, *Anatafe*. See TITANIUM.

OLIVINE. (See OLIVINE.) This mineral forms a conftituent part of many lavas, and is of frequent occurrence in bafaltic rocks. When cryftallized, it is in broad rectangular four-fided prifms, which are imbedded, and fo eafily broken, that it is difficult to afcertain their form; the ftructure of the cryftals is imperfectly lamellar, in a direction parallel with the planes of the prifm. Werner confiders olivine as a diftinct fpecies from chryfolite (fee CHRYSOLITE), with which it is claffed by many mineralogifts. The colour, luftre, and fracture of olivine and chryfolite, are not precifely the fame; olivine is alfo fofter and more frangible than chryfolite. Chryfolite is more tranfparent, and has a greater fpecific gravity, being from 3.4 to 3.34; that of olivine is 3.22 to 3.26. Olivine is often much intermixed with augit; it has generally a paler colour and greater tranfparency than the latter mineral. Olivine is fubject to decompofition, and when this commences it exhibits on the furface irridefcent colours, but afterwards falls into an earth refembling iron ochre.

OLIVEN-

Oliven-Ore, or *Olive Copper-Ore*, arfeniate of copper. See Copper-Ores.

Onyx, a variety of chalcedony with white and grey ftripes. See Chalcedony.

Opal, *Quarz refinite opalin*, Haüy. (See Gem.) This mineral is divided into feven fub-fpecies by Mr. Jamefon.

Precious Opal has frequently a milk-white colour inclining to blue, and difplays brilliant and changeable reflections of green, blue, yellow, and red. It is tranflucent or femi-tranfparent, and when placed between the eye and the light exhibits a beautiful yellow or blue colour. It occurs in veins in clay-porphyry, either maffive, diffeminated, or in plates: it has a fhining or fplendent vitreous luftre, a perfect conchoidal fracture, fcratches glafs, and is eafily frangible. Some varieties adhere to the tongue. Precious opal becomes white and opaque before the blow-pipe, but is infufible. The fpecific gravity is 2.110. According to Klaproth, the conftituent parts are,

Silex - - - -	90
Water - - - -	10
	100

Hence it appears, that the precious opal is properly a hydrate of pure filiceous earth. This mineral, on account of its beauty, is employed in jewellery, and is held in great eftimation. Jewels of opal muft be kept with care, as they are eafily fcratched, and are apt to crack on fudden changes of temperature. Precious opal is found more abundantly at Cafcherwenitza, near Kafchau, in Upper Hungary, than in any other known fituation. It occurs there in clay-porphyry, and mines of it have been worked for a long period; towards the end of the fourteenth century, about 300 men were employed in thefe mines. Precious opal is fometimes fparingly found in the bafaltic rocks, in the north of Ireland, and in the Faroe iflands. The finer varieties of opal are named oriental opal. Taverner, however, informs us, that no precious opal is found in the eaft, and thofe which are fold as oriental are brought from Hungary. Thofe varieties of opal that adhere to the tongue are lefs tranflucent than the others, and more dull; but when immerfed in water, they become nearly tranfparent, and acquire a beautiful play of colours. Thefe opals have received various names, as the oculus mundi, hydrophane or changeable opal. They are much prized by collectors. To preferve their beauty, the water in which they are immerfed fhould be perfectly pure, and they fhould be taken out as foon as they have acquired their full tranfparency. If thefe precautions are neglected, the pores become filled with earthy particles depofited from the water, and the hydrophane will remain more or lefs opaque.

Common Opal differs from precious opal, principally by its inferior luftre and tranfparency, and the greater variety of its colours, which are either milk-white, grey, yellowifh-white, yellow, red, or green. The fame fpecimen never fhews more than one colour by reflected light, but the milk-white variety, when held oppofite the light, tranfmits a wine-yellow colour. Common opal occurs maffive, diffeminated, and in fharp angular pieces. Internally the luftre is fhining, fplendent, and vitreous; the fracture is conchoidal; it fcratches glafs, and is eafily frangible. Before the blow-pipe it is infufible. The fpecific gravity is 2.01 to 2.14. According to Klaproth, its conftituent parts are,

	Opal of Koremutz.	of Telkobayna.
Silex -	98.75	- 93.50
Alumine -	10	
Oxyd of Iron	10	- 1.00
Water -		- 5
	98.95	99.50

Common opal occurs in veins of porphyry and ferpentine, and with chalcedony in bafaltic amygdaloid; it is found in fome metallic veins in Cornwall. Green commom opal is fometimes cut into ring-ftones. The yellow variety is alfo ufed for jewellery; it has been called *wax opal* and *pitch opal*.

Fire Opal, fo called on account of its brilliant red colours and tranfparency, is properly a variety of precious opal: it has hitherto been found only at Zimapan in Mexico. According to Klaproth, its conftituent parts are,

Silex - -	92.
Water - - -	7.75
Iron - - -	25
	100

Mother-of-Pearl Opal, or *Cacholong*, is a milk-white variety of opal, not unlike mother-of-pearl.

Semi-opal.—Its colours are generally darker and more muddy than thofe of common opal; fometimes feveral colours occur together. Semi-opal is maffive, diffeminated, reniform, and botryoidal; it has a gliftening luftre, is more or lefs tranflucent, is hard and eafily frangible. The fracture is large and flat, is conchoidal; it adheres to the tongue. The fpecific gravity is from 2. to 2.18; it is infufible. According to Klaproth, the conftituent parts are,

Silex - - -	81
Alumine - -	3
Oxyd of iron - -	1.75
Carbon - -	5
Ammoniacal waters -	8
Bituminous oil -	0.33
	99.08

Semi-opal occurs in Scotland and the ifle of Rum, and in various parts of Europe: it paffes into chalcedony and conchoidal horn-ftone.

Wood Opal, *Quarz refinite xyloide*, Fr. is petrified wood, penetrated with opal, and is intermediate between common opal and femi-opal. It has a ligneous ftructure, and is diftinguifhed from wood-ftone by its lighter colours, higher luftre, perfect conchoidal fracture, greater tranfparency, and inferior hardnefs. Wood-opal is cut into plates, and ufed for fnuff-boxes and ornaments.

Jafper Opal is of various fhades of reddifh-yellow or reddifh-brown; it is fometimes veined and fpotted; it has a fhining luftre, between vitreous and refinous, and is opaque or feebly tranflucent at the edges. It is hard, and eafily frangible; it occurs maffive in large and fmall pieces, in porphyry and in veins. The fpecific gravity is from 1.86 to 2.07; it is infufible. According to Klaproth, the conftituent parts are,

Silex - - -	43.5
Oxyd of Iron - -	47
Water - - -	7.5
	98

It

It appears to be common or semi-opal rendered opaque by the great intermixture of oxyd of iron.

Oriental *Amethyst*, *Sapphire*, *Ruby*, *Topaz*, and *Emerald*, names given by jewellers to varieties of the sapphire. The blue sapphire is the true or *oriental sapphire;* the violet-blue is the *oriental amethyst;* the red sapphire, the *oriental ruby;* the yellow sapphire, the *oriental topaz;* and the green sapphire, the *oriental emerald*. See Sapphire, &c.

Orpiment, *Red*, or *Realgar*, *Sulphuret of Arsenic; Arsenie sulphurée rouge*, Fr. (See Arsenic.) According to Klaproth, the composition of this ore is,

Arsenic - - -	69
Sulphur - - -	31
	100

Orpiment, *Yellow*, is composed, according to Klaproth, of

Arsenic - - -	62
Sulphur - - -	38
	100

Osmium occurs as a native alloy of the metal so called with iridium; it is found in grains along with platina in alluvial soil in South America. The greens have a pale steel-grey colour, a metallic lustre, and lamellar structure; it is harder than platina, and brittle. The specific gravity is 19.5. By fusion with nitre, it acquires a dark-black colour, but regains its lustre and colour by heating with charcoal.

Palladium is a native alloy of the metal palladium, with a minute portion of platina and iridium; it occurs in grains along with grains of platina in the alluvial gold districts in Brazil. Its colour is pale-steel grey passing into silver-white; the structure of the grains is divergingly fibrous, the lustre metallic. The specific gravity is 12.148, Lowry. Palladium is infusible; but on the addition of sulphur, it melts with ease by continuance of the heat, the sulphur is dissipated, and a globule of metallic palladium remains. With nitric acid, it forms a deep-red solution.

Paranthine. See Scapolite.

Pearl-Spar. (See Brown Spar, *Addenda.*) The name pearl-spar has been given to those varieties of this mineral which in colour and lustre have a strong resemblance to pearl, but it often occurs brown, black, and of various colours.

Pearl-Stone, *Lave vitreuse perlée*, Haüy. (See Pearl-Stone.) This mineral is regarded by many mineralogists as a volcanic production; it is frequently intermixed with obsidian, and hence is classed by them as a variety of the latter mineral. It occurs in basaltic and porphyritic rocks, in large and somewhat angular concretions, which are composed of smaller roundish concretions, and those of others still smaller. The surface of the concretions is smooth, shining, and pearly. The colour is grey, passing into pearl-grey and greyish-black. It is translucent on the edges; it scarcely scratches glass, is easily frangible, and is fusible with intumescence before the blow-pipe into a white spongy glass. This mineral has been found near Sandy Bræ, in Ireland, in the island of Iceland, and in Mexico; it was first discovered in Hungary, where it occurs in large beds. It is classed by Mr. Jameson and Werner with obsidian, pitch-stone, and pumice, as forming a member of the pitch-stone family.

Pea-Stone, *Pisolithe*, Fr. This mineral is composed of carbonate of lime, slightly coloured yellowish-white or brown by the oxyd of iron; it is properly a calcareous tufa, containing rounded globules, varying in size, from a pea to a hazel-nut; these consist of concentric lamellæ, and often contain in the centre a minute fragment of quartz, felspar, or granite, and sometimes, but rarely, a double six-sided pyramid of rock-crystal; but in some instances, the centre of the globule is hollow. Pea-stone occurs in great masses in the vicinity of the hot springs at Carlsbad, in Bohemia; its formation we conceive to be analogous to that of roe-stone, and to be the result of crystallization; the particles included having disposed the calcareous matter to crystallize round them, in the same manner as a thread or fragment of a stone in a saline solution, generally disposes the crystals to shoot round them.

Pergasite, the name given to a new mineral found at Ersby, near Abo, in Finland. The following imperfect account is the only one we have of its character. It has a green colour; its form is an octahedron, with a cleavage in three directions; it is harder than fluor spar. The specific gravity is 3.11. Before the blow-pipe, it melts into a mass with a pearly-white lustre. Its constituent parts are given as under:

Silex - - - - -	42.10
Magnesia - - - - -	18.27
Lime - - - - -	14.28
Alumine - - - - -	14.08
Oxyd of iron - - -	3.52
——- of manganese - -	1.02
——- of an unknown metal	0.33
Fluoric acid and water -	3.90
Loss - - - - -	2.59
	100.09

Peridot *Chrysolite*. See Chrysolite and Olivine.

Petalite, a mineral recently discovered in Sweden; externally, it nearly resembles some varieties of quartz, but the cleavage is two-fold, parallel to the sides of a rhomboidal prism; two of the planes are splendent, and two dull. The planes meet at angles of 100° and 80°, forming a four-sided prism with a rhomboidal base. Its colour is white with a slight tint of pink; it scratches glass, but yields with difficulty to the knife. When exposed to the flame of a blow-pipe it remains for some time infusible, but by continued heat it exhibits a glazed surface, which, on examination with a lens, appears full of minute bubbles. When triturated, the powder has the whiteness of snow. It is partially soluble in highly concentrated nitric acid, losing its colour, and changing to a dingy hue; the acid at the same time becomes clouded. The prussiated alkali threw down a green precipitate, and the solution assumed an amethystine colour, which afterwards changed to brown. The constituent parts of this mineral are stated to be,

Silex - - - - -	80
Alumine - - - - -	15
Manganese - - - -	3
And a new alkali - - -	2

This alkali proves to be the oxyd of a new metal. The new alkali has been called lithia and lithion; it has a greater capacity of saturating acids than any other alkali, and forms a class of salts that are remarkably deliquescent. With alcohol, lithion yields a rose-coloured flame, like that communicated by strontian. The metal of lithion bears a strong resemblance to sodium. The alkali found in petalite contains 44.84 oxygen, united to a metallic base.

Petroleum, *Liquid Bitumen*, or *Mineral Oil*. (See Bitumen.)

Bitumen.) It is eſſentially compoſed of carbon and hydrogen, containing leſs carbon than the ſolid bitumens, or than any kind of mineral coal. In Piedmont, Perſia, Japan, and other countries, it is uſed in lamps, in place of oil, for lighting ſtreets and public buildings; it is alſo mixed with earth, and burned for warming rooms. In Ava, numerous mines are worked for mineral oil or petroleum, the ſhafts are ſunk through coal ſtrata to the coal from whence the oil iſſues; it is intermixed with water, and is ſeparated by decantation.

Pharmacolite, *Arſeniate of Lime, Chaux arſeniatée*, Haüy. Its colours are ſnow-white and milk-white, ſometimes inclining to reddiſh or yellowiſh-white. It occurs in ſmall reniform botryoidal and globular maſſes; ſometimes it incruſts other minerals, or is cryſtallized in ſmall diverging capillary cryſtals. Externally, it has a ſilky glimmering luſtre; internally, it is ſhining or gliſtening. The ſtructure is delicately radiated, either ſtraight, diverging, or ſtellular, and ſometimes fibrous. It yields to the nail, and is eaſily frangible. The ſpecific gravity is 2.5. According to Klaproth, the conſtituent parts are,

Lime - - - -	25.00
Arſenic acid - - -	50.54
Water - - - -	24.46
	100.00

According to John,

Lime - - - -	27.28
Arſenic acid - - -	46.58
Water - - - -	23.86
	97.72

There is an earthy variety of pharmacolite, which occurs in thin cruſts, and is dull and opaque. Pharmacolite is found in veins in granite, with ores of cobalt and native arſenic.

Phosphate *of Copper, Cuivre phoſphatée*, Haüy. Under the ores of copper, one ſpecies of this mineral is deſcribed, which was the only one then known. Mr. Jameſon makes three ſub-ſpecies of phoſphate of copper; foliated phoſphate of copper, fibrous phoſphate of copper, and compact phoſphate of copper.

Foliated Phoſphate of Copper, Cuivre phoſphatée rhomboidal, Haüy, has a greyiſh-black colour externally, but internally is emerald-green, verdigris-green, and leek and olive-green. It occurs cryſtallized in octahedrons, which are ſometimes lengthened or cuneiform; alſo in rhomboids with ſmall curvilinear faces; the edges and angles are ſometimes truncated. The ſtructure is lamellar, the luſtre ſhining, between vitreous and pearly; it is tranſlucent. This ore is inſoluble in water, but diſſolves without effervefcence in nitric acid. Before the blow-pipe, it fuſes into a browniſh globule, which ſpreads on the ſurface of the charcoal by a continuance of the heat, and acquires a reddiſh-grey metallic luſtre. The globule on cooling cryſtallizes into three-ſided and ſix-ſided facets. According to Bucholz, it is a compound of copper and phoſphoric acid. It has been found in the neighbourhood of Neuſotil in Hungary, and at Virneberg, near Rheinbrectenbach, on the Rhine; at the latter place it occurs with *fibrous phoſphate of copper;* the latter mineral is found maſſive, botryoidal, and in cruſts; it has a divergingly fibrous or radiated ſtructure.

Compact Phoſphate of Copper, Cuivre phoſphatée compacte, Haüy, has the ſame localities as the foliated ſub-ſpecies; it occurs maſſive, reniform, botryoidal, and incruſting; it has a flat conchoidal fracture, a fibrous ſtructure may ſometimes be obſerved. It contains near 1.81 parts of phoſphoric acid united with 68 of copper.

Phosphate *of Manganeſe*. See Manganese-*Ores*.

Phosphorite, *Common*, and Phosphorite, *Earthy*. Theſe minerals have been claſſed by mineralogiſts as varieties of apatite; but Mr. Jameſon makes phoſphorite a diſtinct ſpecies, which he divides into two ſub-ſpecies.

Common Phoſphorite, Maſſive Apatite, Aikin; *Chaux phoſphatée terreuſe*, Haüy; has generally a yellowiſh, greeniſh, or reddiſh-white colour; it occurs maſſive, ſtalactitic, reniform, and incruſting, alſo cryſtallized in ſix-ſided tables; it is opaque, ſoft, and eaſily frangible. The ſpecific gravity is 2.81. When rubbed in an iron mortar, or laid on hot coals, it emits a greeniſh light. According to Pelletier, its conſtituent parts are,

Lime - - -	59.0
Phoſphoric acid - -	34.0
Silex - - -	2.0
Fluoric acid - -	2.5
Muriatic acid - -	0.5
Carbonic acid - -	1.0
Oxyd of iron - -	1.0
	100.

In part of Eſtramadura in Spain near Lagroſan, it forms whole beds that alternate with lime-ſtone and quartz.

Earthy Phoſphorite conſiſts of dull earthy particles, looſely cohering, and appears to be the preceding mineral in a decompoſing ſtate, intermixed with earthy matter. We think the characters and conſtituent parts of theſe minerals entitle them to be claſſed merely as varieties of apatite. The multiplication of ſpecies, where no ſufficient ſpecific difference exiſts, tends to retard the progreſs of uſeful knowledge, and ought not to be unneceſſarily introduced.

Phosphormangan. Phoſphate of manganeſe. See Manganese.

Picrolite, a mineral deſcribed by Hanſmann. It is principally compoſed of the carbonate of magneſia. According to the deſcription of Mr. Jameſon, (Mineralogy, vol. ii. p. 537.) its colours are leek-green, mountain-green, or ſtraw-yellow. It occurs maſſive; internally it is dull or glimmering and pearly. The fracture is long, ſplintery, which paſſes by gradation to flat conchoidal. In ſome inſtances, it ſhews a delicate concentric fibrous ſtructure. It ſometimes occurs in concretions which are either concealed or have undulating lamellæ. It is tranſlucent on the edges, and is rather hard, and difficultly frangible. It feels meagre, and is infuſible. The ſpecific gravity is 2.53. It appears to be allied to ſerpentine and talc.

Pinite. This mineral is nearly allied to mica. It occurs cryſtallized in regular ſix-ſided priſms, which, according to Haüy, is the primitive form. The priſms are ſometimes truncated on the edges and angles. Maſſive varieties of pinite alſo occur in thick and ſtraight lamellar concretions. (See Pinite.) This mineral is found in the granite veins at St. Michael's Mount, Cornwall, and in ſome parts of Scotland in porphyry.

Pipe-clay. See Clay, and Porcelain Clay, *Addenda*.

Pistacite, or *Epidote*. See Pistazite, and Epidote, *Addenda*.

Pitch-coal, or *Jet*. See Jet.

Pitch-

Pitch-ore, or *Pitch-blende*, an ore of Uranium. See Uranium, and Pitch-ore.

Pitch-stone, *Refinite*, and *Petro-filex refinite*, Fr. This mineral is named from the ftriking refemblance which fome varieties have in colour and luftre to pitch. Its prevailing colours are dark-green, from which it paffes into black, grey, and blue, to brown and red. It is feebly tranflucent, and has a gliftening or fhining vitreo-refinous luftre. It occurs maffive in veins and beds of confiderable magnitude. Pitch-ftone is fometimes columnar, and fometimes in thick and wedge-fhaped concretions, or in fomewhat globular or curved lamellar diftinct concretions, and fometimes it has a flaty ftructure. The fracture is more or lefs perfectly conchoidal, or paffing into fplintery. The fragments are angular and fharp-edged. It fcratches glafs, is rather eafily frangible, and is fufible into a grey fpongy enamel. Some varieties of this mineral, however, fufe with great difficulty by the blow-pipe. The fpecific gravity of pitch-ftone is about 2.3. According to Klaproth, its conftituent parts are,

Pitch-ftone of Meiffon.

Silex - - -	73.00
Alumine - - -	14.50
Lime - - -	1.00
Oxyd of iron - -	1.00
Oxyd of manganefe -	10
Soda - - -	1.75
Water - - -	8.50
	99.85

Pitch-ftone is found in various parts of Scotland, and in the iflands of Rum, Egg, and Arran. It bears a near refemblance to obfidian, or volcanic glafs, into which it appears to pafs, and alfo into pearl-ftone. It is regarded by many geologifts as a volcanic product. Like bafalt, it interfects rocks of different formations, from granite to fand-ftone, and is intimately affociated with bafaltic rocks.

Plasma has generally a dullifh-green colour, with yellowifh or whitifh dots, a gliftening luftre, a conchoidal fracture, is tranflucent, and rather harder than quartz. It confifts of about ninety-feven parts of filex, and appears to be properly a green variety of flint. It was confidered by the Romans as a gem, and figures were engraved upon it. Moft of the fpecimens in collections were found in the ruins of Rome.

Platina. See Platina.

Pleonaste. See Ceylanite, *Addenda*.

Plumbago. Graphite or black-lead. See Plumbago, and Graphite.

Porcelain-clay. (See Porcelain.) The porcelain-clay of Cornwall occurs in beds of confiderable thicknefs in the parifh of St. Stephen's. According to Wedgwood, it confifts of fixty parts alumine, and forty of filex. Porcelain clay originates from the decompofition of granitic rocks, abounding in felfpar, and frequently contains portions of quartz and mica. The abfence of iron in porcelain-clay is what conftitutes one of its moft effential properties,—that of remaining white after burning. The Kaolin or Chinefe porcelain-clay contains a much larger portion of filex than of alumine.

Porcellanite, or *Porcelain Jafper*, (fee Jasper,) appears to be formed accidentally by fires in coal-mines, which have indurated and femivitrified beds of coal-fhale or flate-clay.

Pot-stone, *Lapis ollaris; Talc olaire*, Haüy. (See Pot-stone.) This mineral appears to be indurated talc, paffing into ferpentine; with the latter rock, it is frequently affociated. It has a curved and undulatingly-lamellar ftructure, paffing into flaty. It is very foft, fectile, and greafy to the feel, is tranflucent on the edges, and affords a white-coloured ftreak. It is infufible before the blow-pipe. The analyfis of this mineral given by Tromfdorf is,

Silex - - -	39
Magnefia - - -	16
Oxyd of iron - -	10
Carbonic acid - -	20
Water - - -	10

Near Inverary there is a quarry of talcous flate, fome of which appears to pafs into pot-ftone, and can be turned in the lathe; of this ftone, Inverary Caftle is built. Pot-ftone was extenfively ufed in Upper Egypt for culinary veffels. They were found to refift the action of fire, and did not communicate any tafte to the food boiled in them. Quarries of pot-ftone were worked on the banks of the Lake of Como from the beginning of the Chriftian era to the year 1618, when the mountain fell down on the 25th of Auguft, and deftroyed the neighbouring town of Pleurs. This town had annually raifed ftone from thefe quarries to the value of 60,000 ducats. Pot-ftone is alfo ufed for lining ovens and furnaces, and is remarkably durable.

Prase, *Quarz hyalin vert obfcur*, Haüy, is tranflucent green quartz, the green colour being derived from an intimate intermixture of quartz and actinolite. See Quartz, and Prasius.

Precious *Garnet*. See Garnet.

Prehnite. (See Prehnite.) This mineral is divided into two fub-fpecies by Mr. Jamefon; foliated prehnite and fibrous prehnite. The prevailing colours are, green, greenifh-white, and yellowifh-white. It occurs both maffive and cryftallized in oblique four-fided tables, or in fix or eight-fided tables; alfo in four-fided and fix-fided prifms. The cryftals are generally attached by their lateral plains, and form diverging groups. The cleavage is fingle, parallel to the fhort diagonal of a rhomboidal prifm, the planes of which are inclined at angles of 103° and 77°. The luftre is fhining and pearly; it is tranflucent or tranfparent, fcratches glafs with difficulty, and intumefces before the blow-pipe. Prehnite was difcovered by Mr. Bakewell in a rock bafaltic amygdaloid, near Berkley in Gloucefterfhire, accompanied with green earth and maffive lamellar prehnite, or kenpholite. This is the only Englifh locality of thefe minerals at prefent known. It was firft brought from the Cape of Good Hope.

Fibrous Prehnite has a delicate fibrous ftructure, either ftraight, diverging, or ftellular. According to Langier, its conftituent parts are,

Silex - - -	42.50
Alumine - -	28.50
Lime - - -	20.40
Soda and Potafh - -	0.75
Oxyd of iron - -	3.00
Water - - -	2.00
	97.15

Both fub-fpecies of prehnite bear a near refemblance to zeolites, but they do not gelatinize with acids, and they become electric by heating.

Pumice. See Pumice-stone, and Volcanic *Products*.

Pycnite *Schorlite*, or Schorlaceous *Beryl*. (See Pycnite.)

Pycnite.) The cryſtals of this mineral are long hexahedral priſms, and are deeply ſtreaked longitudinally. They have a cleavage at right angles to the axis of the priſm. Pycnite is now conſidered by Haüy as a variety of the topaz.

Pyrites. See Pyrites.

Pyrope. This mineral is now regarded by Haüy as a variety of the precious garnet, with an accidental portion of magneſia derived from the rock in which it is imbedded.

Pyrophysalite. See Pyrophysalite.

Pyrosmalite. Native muriate of iron. See Iron-Ores, *Addenda*.

Pyroxene, Augit. See Pyroxene and Augit, *Addenda*.

Quartz, *Quarz hyalin*, Fr. See Quartz.

Common Quartz, *Rock Cryſtal*, *Amethyſt*, and *Cairngorm Stone*, or *Clove-brown Quartz*, *Aventurine Quartz*, and *Roſe* or *Milk Quartz*, are eſſentially the ſame mineral ſubſtance or pure ſilex, varying only in tranſparency or colour, owing probably to a very ſlight admixture of the other earths or metallic oxyds, an admixture which may be regarded as accidental, and which is ſcarcely appreciable by chemical analyſis. According to Bucholz, rock-cryſtal is compoſed of $99\frac{3}{8}$ of ſilex. It is probable, however, that many minerals, which have hitherto been claſſed with quartz from bearing in many characters a cloſe reſemblance to it, may contain other ingredients beſides ſilex in ſuch proportions as to conſtitute them diſtinct ſpecies. This opinion is rendered more probable from the recent diſcovery of a mineral in Sweden, called petalite, which might eaſily be miſtaken for a variety of quartz, but which contains a conſiderable portion of alumine, and two parts in the hundred of an alkali heretofore unknown. See Petalite, *Addenda*, and Rock-*Cryſtal*.

Quicksilver. See Mercury, *Ores of*.

Realgar. See Arsenic-*Ores*, and Realgar.

Red *Antimony Ore*. (See Antimony-*Ores*, and Red *Antimony*.) A variety of red antimony-ore, called tinder-ore, is deſcribed by Mr. Jameſon as occurring in delicate flexible leaves, which are opaque and friable, ſoil ſtrongly, and ſwim on water. Tinder-ore contains a portion of ſilver.

Red *Cobalt-Ore*. (See Cobalt-*Ores*.) This ſpecies of ore is divided by Mr. Jameſon into three ſub-ſpecies, *earthy red cobalt-ore* or *cobalt ochre*, *ſlag red cobalt ochre*, and *radiated red cobalt-ore* or *cobalt bloom; Cobalt arſeniaté aciculaire*, Haüy. The analyſis of this ore by Bucholz gives

Cobalt - - - - - -	39
Arſenic acid - - - - -	38
Water - - - - - -	23
	100

This ore has been found at Alva, in Stirlingſhire, and at Tyndrum; alſo in lime-ſtone in Linlithgowſhire, and at the Dolcoath mine in Cornwall. Slaggy red cobalt ochre has a muddy crimſon-red colour, or dark hyacinth-red, which paſſes into cheſnut-brown. It occurs in thin cruſts, and ſometimes reniform. It has a ſhining and reſinous luſtre, a conchoidal fracture, and is tranſlucent, ſoft, and brittle.

Red *Iron-ſtone*. See Iron-ores, *Addenda*.

Red *Lead-ore*, or *Chromate of Lead*. See Lead-ores.

Red *Manganeſe-ore*. See Manganese.

Red *Silver-ore*, or *Ruby Silver*, where read—before the blow-pipe *on* charcoal.

Reddle, *Red Chalk*, or *Red Ochre*. See Reddle.

Retinasphaltum. See Retinasphaltum.

Reussite, the name given to a ſalt which occurs in the country round Sedlitz, and at Piln near Brux. It forms a mealy efflоreſcence, and is alſo cryſtallized in flat ſix-ſided priſms and in acicular cryſtals. According to Reuſs, it conſiſts of

Sulphate of ſoda - -	66.04
Sulphate of magneſia -	31.35
Muriate of magneſia - -	2.19
Sulphate of lime - -	0.42
	100

Rhomb *Spar*. See Brown *Spar*, *Addenda*.

Rock *Butter*. (See Rock *Butter*.) This mineral appears to be a ſub-ſulphate of alumine. It oozes from aluminous rocks.

Rock *Cork; Aſbeſte Trepe*, Haüy. See Rock *Cork*.

Rock-crystal. (See Quartz.) This is the pureſt variety of quartz. Very large and brilliant rock-cryſtals occur in various parts of Scotland. The ſmoke-grey or clove-brown cryſtals are called cairngorm, from a place in the upper part of Aberdeenſhire, where they occur in alluvial ſoil along with beryl and topaz. The largeſt rock-cryſtals hitherto found come from the iſland of Madagaſcar. Faujas St. Fond mentions a cryſtal imported from thence into France, which weighed upwards of one hundred and fifty pounds. Very brilliant groups of rock-cryſtal occur in Dauphiny. Vaſes of rock-cryſtal were highly prized by the ancients. A vaſe, broke by the emperor Nero in a fit of deſpair, was eſtimated at 15,000 livres. Different colours may be communicated to rock-cryſtals artificially, by heating them and plunging them into different-coloured ſolutions.

Rock-salt. (See Rock-salt.) According to the analyſis of Dr. Henry, the rock-ſalt of Cheſhire contains, in 1000 parts,

Muriate of ſoda - - -	$983\frac{1}{4}$
Sulphate of lime - - -	$6\frac{1}{2}$
Muriate of magneſia - -	$0\frac{3}{10}$
Muriate of lime - - -	$0\frac{1}{10}$
Inſoluble matter - - -	10
	1000

Rock-wood, or *Ligniform Aſbeſtus*. See Asbestus.

Roe-stone, or *Oolite; Chaux carbonatée globuliform*, Haüy. See Roe-stone.

Rose *Quartz*, or *Milk Quartz*. See Quartz.

Rubellite, called *Red Schorl*, a variety of tourmaline. See Rubellite, and Tourmaline.

Ruby, *Oriental*, or *Red Sapphire*. See Gems, and Sapphire.

Ruby *Spinelle*. (See Gems and Ruby.) The ſpinel ruby is the common ruby of the jewellers. It differs from the oriental ruby in the form of its cryſtallization, and contains a portion of magneſia and chromic acid. The former is nearly unmixed alumine. When theſe two gems are cut, it is, however, difficult to diſtinguiſh them. The oriental ruby is harder than ſpinel. Though the prevailing colour of the common ruby or ſpinel is red, yet it is ſometimes blue-green or yellowiſh-brown. The carmine-red is called the ſpinel ruby; the cochineal ruby is called the balais ruby, from Balachan, the Indian name of Pegu, where it is found. The ſpecific gravity varies from 3.50 to 7.30; that of oriental ruby from 3.97 to 4.28. The latter is a true ſapphire.

Rutile, or *Sphene; Titane oxidé*, Haüy. (See Rutile.) This mineral, which appears to be on analyſis a pure oxyd of titanium, (ſee Titanium,) is of a dark blood-red colour, or light-red and browniſh-red. It occurs maſſive, diſſeminated, membranous, and in cryſtals. The cryſtals are rectangular four-ſided priſms, oblique four-ſided priſms, and alſo ſix and eight-ſided priſms. The cryſtals are ſmall and often capillary. It occurs imbedded in druſy cavities, in granite, ſienite, gneiſs, mica-ſlate, chlorite-ſlate and hornblende-ſlate, and in lime-ſtone. It has been found in the granite of Cairngorm, the lime-ſtone of Rannech, and at Craig Cailleach, near Killin, imbedded in quartz, alſo near Bedgalleſt, in Caernarvonſhire.

Rutilite, *Titane ſiliceo calcaire*, or *ſphene*. See Rutilite and Sphene.

Sahlite. (See Sahlite.) *Pyroxene laminaire gris verdatre*, Haüy. According to Bournon, the primitive form of ſahlite is a rectangular four-ſided priſm, having rectangular baſes, which are inclined on the two oppoſite ſides of the priſm, ſo as to form angles of 109°,15, and 73°,45: hence he conſiders it as a diſtinct ſpecies from augit. According to Jameſon, the cleavages of ſahlite are five-fold, one parallel with the terminal planes, two with the lateral planes, and two with the diagonals of the priſm; the three firſt are made with great facility. The croſs fracture of ſahlite is uneven and dull; that of augit, though uneven, generally inclines to conchoidal, and has a conſiderable degree of luſtre.

Sal Ammoniac, *Native; Ammoniaque muriatée*, Haüy. (See Sal Ammoniac.) This ſalt is divided into two ſub-ſpecies by Werner, *volcanic ſal ammoniac* and *conchoidal ſal ammoniac*. The former occurs in fiſſures, or coating volcanic rocks, and alſo in the vicinity of burning beds of coal. The latter occurs with ſulphur, in indurated clay, or clay-ſlate, in Bucharia. According to Klaproth, it contains 2.50 of ſulphate of ammonia, with 97.50 of the muriate.

Sappace, *Kyanite; Diſthene*, Haüy. See Sappace, and Kyanite, *Addenda*.

Sapphire, *Teleſie*, and *Corindon hyalin*, Haüy. The common forms of the cryſtals of ſapphire are the perfect ſix-ſided pyramid and ſix-ſided priſm, or the double ſix-ſided pyramid. Theſe forms are frequently variouſly modified by truncations on the angles and extremities. (See Gems, Sapphire, and Ruby, *Addenda*.) The red ſapphire is the oriental ruby; it differs a little from the blue ſapphire in its conſtituent parts, which, according to Chenevix, are,

Alumine - - - - -	90
Silex - - - - -	7
Oxyd of iron - - -	1.2
	98.2

Sapphire occurs in alluvial ſoil along with pyrope, zircon, and iron-ſtone, at Podſedlitz and Trziblith, in Bohemia; in the banks of the ſtream Riou, near Expailly, in France; alſo at Brendole, in the Vicentine, and in Portugal.

Sarcolite, *Red Zeolite*. See Sarcolite and Zeolite.

Sarde, *Sardoine*, a reddiſh-brown cornelian, which appears of a deep blood-red when held between the eye and the light.

Sardonix is a cornelian compoſed of white and red layers.

Sassolin, *Native Boracic Acid*. See Sassolin.

Satin-Spar, *Chaux carbonatée fibreuſe conjointe*, Haüy. See Sattin-Spar.

Saussurite, *Felſpath Tenace*, Haüy; a mineral ſo called after the older Sauſſure. It was conſidered by him as nearly allied to nephrite or jade, (ſee Nephrite, *Addenda*,) but is now claſſed with the felſpar family. It occurs maſſive, diſſeminated, and in rolled pieces, in various parts of Switzerland and Norway, Finland, Italy, France, and Savoy, and it forms a conſtituent part of the well-known rock in Corſica, called the *Verde di Corſica*, which is compoſed of diallage and ſauſſurite. It occurs with diallage metalloide near the Lizard Point, in Cornwall. The colours are white-grey and green, of various tints; green or yellowiſh, or greeniſh-white, are the moſt prevailing colours. Internally the luſtre is dull or faintly glimmering.

The fracture is ſplintery; but according to Mr. Jameſon, an imperfectly foliated ſtructure may be diſcerned with a double rectangular cleavage. It is faintly tranſlucent on the edges, is extremely tough, and ſo hard, as to ſcratch glaſs; the feel is ſomewhat unctuous. The ſpecific gravity of ſauſſurite is 3.20 to 3.31. According to Sauſſure, the conſtituent parts are,

Silex - - - -	44
Alumine - - - -	30
Lime - - - -	4
Soda - - - -	6
Potaſh - - - -	0.25
Iron - - - -	12.50
Manganeſe - - -	0.05
	96.80

According to Klaproth,

Silex - - - -	49
Alumine - - - -	24
Lime - - - -	10.50
Magneſia - - - -	3.75
Soda - - - -	5.50
Iron - - - -	6.50
	99.25

Before the blow-pipe, ſauſſurite melts on the edges and angles; but according to Mr. Jameſon is not entirely fuſible.

Scapolite, *Paranthine*, Haüy. (See Scapolite.) This mineral has been divided by Mr. Jameſon into three ſub-ſpecies; radiated ſcapolite, foliated ſcapolite, and compact ſcapolite. *Foliated ſcapolite* has a three-fold and rather oblique-angular cleavage; the croſs fracture is ſmall and fine-grained, uneven or ſmall conchoidal. This mineral, beſides occurring with the other ſub-ſpecies in Scandinavia, is found along with ſchorl in granitic maſſes that are imbedded in compact felſpar, or white-ſtone, on the north-weſtern acclivity of the Saxon Erzgebirge. *Compact green ſcapolite* is the wernerite of Haüy. It occurs both maſſive and cryſtallized in rectangular four-ſided priſms, acuminated by four planes ſet on the lateral edges. Compact red ſcapolite occurs along with the green ſub-ſpecies, but is of a blood-red colour. All the varieties of ſcapolite decay very readily on expoſure to the air.

Schorl, *Tourmaline noir*, Haüy. (See Schorl.) The conſtituent parts of ſchorl, as ſtated by Klaproth, vary confiderably from the analyfis of Gerhard, which we have given, and are,

Silex - - - - -	36.75
Alumine - - - - -	34.50
Magnefia - - - - -	0.25
Oxyd of iron with a trace of manganefe - - -	21
	92.50

According to Gerhard,

Silex - - - - -	36.50
Alumine - - - - -	31.0
Magnefia - - - - -	1.25
Oxyd of iron with a trace of manganefe - - -	23.50
	92.25

The cryftals of fchorl are longitudinally ftreaked, and have externally a fhining luftre. It occurs in the granite rocks of Cornwall, and intermixed with quartz, when it forms a compound rock, known to Cornifh miners by the name of *cockle*. Very magnificent cryftals of fchorl have recently been difcovered near Bovey Heathfield, in Devonfhire. See Tourmaline.

Schiller-Spar, *Diallage metalloide*, Haüy, occurs moft frequently in laminæ diffeminated in ferpentine, and is regarded by fome mineralogifts as cryftallized ferpentine. The colours are, olive-green, pinchbeck-brown, and yellowifh-brown. The luftre of the principal fracture is fplendent and pfeudo-metallic; the crofs fracture is dull and glimmering. The cleavage is diftinct in the direction of the laminæ. According to Bournon, the primitive form is a rectangular four-fided prifm, in which the bafes are fet on the broadeft lateral planes, forming with them angles of 85° and 95°. The prifm is divifible both in the direction of the lateral and terminal planes, but moft eafily parallel with the latter. Schiller-fpar is tranflucent in thin laminæ; it yields a greenifh-grey ftreak, is fectile, and fofter than hornblende.

Schorlaceous *Beryl*. See Pycnite.

Selenite, or *Cryftallized Gypfum*. See Gypsum.

Serpentite, *Noble and Common*. See Serpentine.

Shale, *Coal-Shale and Bituminous Shale*, a name given to the argillaceous ftrata which accompany coal. Thefe confift of clay more or lefs indurated and flaty, and intermixed with a portion of carbonaceous or bituminous matter.

Siberite, a name given by fome mineralogifts to *Rubellite;* which fee.

Silver-ores. (See Silver.) A fpecies of native filver occurs in Norway, which contains 28 parts in the 100 of gold, and is called *auriferous native filver*. On account of the gold, its fpecific gravity is greater than native filver. Its other characters, except the colour, (which inclines to brafs-yellow,) agree with *native filver;* which fee, under Silver-Ores.

An ore of filver containing bifmuth has been found in one mine on the Schapbach, in the Black Foreft. It is called *bifmuthic filver*. It is a pale lead-grey, is foft, fectile, and eafily frangible. Before the blow-pipe metallic globules ooze out, which, on the addition of borax, unite in one metallic button, which is brittle, and of a tin-white colour. It contains 27 parts of lead, 33 of bifmuth, and 15 of fulphur, combined with a portion of iron and fulphur, and one part copper.

Corneous Silver-Ore, or *Horn Silver*, is divided by Mr. Jamefon, in the laft edition of his Mineralogy, into four fub-fpecies; *conchoidal*, *radiated*, *common*, and *earthy corneous filver-ore*.

Conchoidal corneous Silver-Ore.—Its colours are greyifh or greenifh-white. It occurs maffive in compact lime-ftone, at Guantahoygo in Peru; it has an adamantine luftre, and is the pureft kind of corneous filver known, containing

Silver - - - - -	76
Oxygen - - - - -	7.6
Muriatic acid - - -	16.4

The radiated corneous Silver-Ore has a dark-green colour, and, like the preceding, has hitherto been found only in South America.

Common corneous Silver-Ore, (fee Silver-Ores,) has been found in fome of the mines in Cornwall, particularly at Huel-Mexico, and in a mine near Peranzabula, on the north-eaft of Cornwall. In the analyfis of this ore, we have ftated the conftituent parts at 68 of filver, and 28 of muriatic acid; but 6 parts of the latter are oxygen.

Earthy corneous Silver-Ore is very foft, and almoft friable. This mineral is an intermixture of corneous filver-ore and alumine.

Earthy Silver-Glance appears to be a decompofing fulphuret of filver. It has a blueifh-black colour, and varies from friable to folid; it is dull or glimmering, but yields a metallic ftreak; it occurs with other ores of filver in veins.

Under the localities of filver in England, in the article Silver-Ores, for Benalften *r.* Beeralften, Devonfhire. One of the richeft repofitories of filver is the Weal Duchy Mine, on the banks of the Tamar, above Plymouth. Silver-ores occur there in regular veins, but are alfo diffeminated in nodules, through the rock itfelf, which is killas or clay-flate. The ores are, native capillary filver in confiderable branches, vitreous filver-ore, black filver, and ruby filver-ore. Under the article Silver, we have given the annual quantity of gold and filver obtained in Europe, South America, and part of Afia, as given by Humboldt, in killogrammes, which reduced to the value of the pound fterling is as under:

	Gold.	Silver.
Europe - -	178,697	468,177
Northern Afia	74,124	192,966
America - -	2,382,315	7,071,830
	£2,635,136	7,732,973

Total annual value 10,368,109*l.*; a fum not equal to the payment of one-half of the intereft of the national debt of Great Britain!

Slate, or *Slate-Clay*, Werner. See Slate.

Slate-spar, *Chaux carbonatée nacré*, Fr. (See Slate-*Spar.*) Though this is made a diftinct fpecies of the limeftone family by fome mineralogifts, it is compofed of carbonate of lime with an admixture of about three or four parts in the hundred of manganefe or iron with water, to which probably its nacry luftre may be owing. It occurs in fome parts of Cornwall, and in Scotland.

Slikensides, a name given by the Derbyfhire miners to galena or lead-glance, when it forms a fmooth polifhed furface or lining to veins.

Smaragdite, green diallage; *Diallage verte*, Haüy. See Diallage.

Soap-Stone, a variety of fteatite, is found in Cornwall, and

and extenfively ufed in the porcelain manufacture at Worcefter. It has a milk-white or greenifh-grey colour, mottled with a muddy-purple: it is very unctuous to the touch, yields to the nail, and falls to pieces in hot water. Before the blow-pipe, it is friable into a fomewhat tranflucent enamel. According to the analyfis of Klaproth, it contains

Silex	45.00
Alumine	9.23
Magnefia	24.75
Oxyd of iron	1.00
Potafh	0.75
Water	18.00
	98.73

Under the article STEATITE, it is ftated to differ from common fteatite by the abfence of alumine; it fhould have been by the excefs of alumine. Some varieties of fteatite fcarcely contain a trace of the latter earth.

SODA, *Native*, or *Natron*. See NATRON, *Addenda*.

SODALITE. (See SODALITE.) This mineral is claffed by Mr. Jamefon with the felfpar family, on account of its external characters; it differs from felfpar in the proportions of its conftituent parts, and foda fupplies the place of potafh, which is a conftituent of moft felfpars.

SOMMITE, or *Nepheline*. See SOMMITE and NEPHELINE, *Addenda*.

SPARRY *Iron-ftone*. See IRON, and IRON, *Addenda*.

SPECULAR *Iron-Ore*. See IRON.

SPHENE. See SPHENE, RUTILE, and TITANIUM.

SPINEL. See GEM, RUBY, and SPINEL.

SPODUMENE. (See SPODUMENE.) According to D'Andrada, this mineral before the blow-pipe firft feparates into gold-coloured fcales, and then into a kind of powder or afh. It is recently found to contain 8 *per cent.* of the new alkali lithia.

STAUROLITE, or *Grenatite*. See STAUROLITE and GRENATITE, *Addenda*.

STAUROTIDE, the name given by Haüyto ftaurolite.

STEATITE. See STEATITE and SOAP-STONE, *Addenda*.

STILBITE. See ZEOLITE.

STRIPED *Jafper*. See JASPER.

STRONTIANITE, or *Strontian*; *Strontian carbonatée*, Fr. See STRONTIAN.

SULPHATE *of Cobalt*, *of Copper*, *of Iron*, *of Lead*, *of Manganefe*, *of Zinc*. See the ores of each of thefe metals, where the native metallic are defcribed.

SULPHATE *of Soda*, *Native*. See SODA.

SULPHUR, *Common* and *Volcanic*. See SULPHUR.

SULPHURETS, *Native*, are combinations of the different metals with fulphur. See PYRITES and the different metals.

SURTURBAND, or *Fibrous Brown Coal*, or *Bituminous Wood*, *Fibreux*, Fr. See COAL and WOOD-COAL.

SWINE-STONE, or *Fœtid Lime-ftone*. See SWINE-STONE.

TABULAR SPAR. *Spath en Tables*, Haüy. See TABULAR SPAR.

TALC. See TALC.

TANTALITE. See TANTALITE.

TELESIA, the name given by Haüy to the fapphire.

TELLURIUM *Ores*, and *Tellurium*. See TELLURIUM.

THALLITE, or *Epidote*. See THALLITE.

THUMMERSTONE, or *Axinite*. See THUMMERSTONE.

TILE-ORE, *Earthy* and *Indurated*, an ore of copper (fee COPPER); the latter is confidered by Werner as an intimate combination of red copper-ore and brown iron ochre, containing from 10 to 50 *per cent.* of copper; the red varieties contain the greateft quantity of copper. The dark-brown variety, on account of the refemblance of its fracture to pitch, has been called pitch-ore (*Paherz*, Werner.)

TIN-STONE. See TIN.

TIN PYRITES, or *Bell-Metal Ore*. See TIN.

TITANIUM. See TITANIUM.

TOPAZ, *Topaze*, Fr. See TOPAZ and GEM.

TOURMALINE, *Tourmaline*, and *Le fchorl electrique*, Fr. See TOURMALINE.

TREMOLITE, *Grammatite*, Haüy. See TREMOLITE.

TRIPOLI, or *Rotten-ftone*. See TRIPOLI.

TUFA. See TUFA.

TUNGSTEN. See TUNGSTEN.

VARIEGATED *Copper-Ore*, *Cuivre pyriteux hepatique*, Haüy, a native fulphuret of copper, which has a variegated or irridefcent tarnifh. See COPPER-ORES.

VESUVIAN, *Idocrafe*, Haüy. (See VESUVIAN.) The primitive form of the cryftals of Vefuvian is a right prifm with fquare bafes, differing little from the cube. Vefuvian is cut for ornamental purpofes by the lapidaries at Naples, and is called the chryfolite of Vefuvius.

UMBER, *Argile ocreufe buin*, Fr. See UMBER.

URAN MICA, or *Uranite*, and *Uran Ochre*. See URANIUM, *Ores of*.

WACKE, or *Wacken*. See WACKE.

WAD. See WAD and MANGANESE.

WAVELLITE, or *Hydragillite*, *Diafpore*, Haüy. See WAVELLITE.

WHET-SLATE, or *Whetftone-Slate*, *Noverculite*, Fr. See SLATE and WHET-SLATE.

WHITE *Antimony-Ore*, *White Copper-Ore*, *White Manganefe-Ore*, *White Silver-Ore*, and *White Vitriol* or *Sulphate of Zinc*. See each of thefe metals, and *Ores of*.

WITHERITE, or *Carbonate of Barytes*. See WITHERITE and BARYTES.

WOLFRAM, *Schelin Ferrugine*, Haüy. (See WOLFRAM.) This mineral occurs moft abundantly in many of the mines of Cornwall, but has not yet been applied to any ufe.

YENITE, *Lievrit*, Werner. See YENITE.

YTTRO-TANTALITE. See TANTALITE and YTTRO-TANTALITE.

ZEOLITE. See ZEOLITE.

ZINC. See ZINC, *Ores of*.

ZIRCON and ZIRCONITE. See ZIRCON.

ZOISITE. See ZOISITE.

MINGRELIA, l. 12, after gom, add—a kind of pafte made of. At the clofe, add—According to Reineggs, it contains four millions of fouls, and annually exports 12,000 flaves.

MINKALLI, an African term, denoting a quantity of gold, nearly equal to 10*s*. fterling.

MINOT, in *Geography*, a town of America, in the diftrict of Maine, and county of Cumberland, having 2020 inhabitants.

MIRZIN, *r*. WOLEIN.

MODBURY, l. 33, *r*. 1811—1890—863 males; l. 34, 1027 females, 190 families, and 156.

MOFFAT, col. 2, l. 13, *r*. 1811; l. 14, *r*. 1824 perfons, occupying 334 houfes; 850 being males, and 974 females.

MOGO, l. 2, after gulf, add—which has one of the moft fecure roadfteads in the gulf, formed by Cape Boftana to the E. and the point improperly called Certes to the W. and capable of holding the largeft fleets.

MOHOCKS, a denomination given to a mob of diforderly people, who traverfed the ftreets of London at night,

night, and amufed themfelves with wounding and disfiguring the men, and indecently expofing the women, in the year 1711. A reward of 100*l.* was offered by royal proclamation for apprehending any one of them.

MOLD, l. 6, *r.* 1811, the parifh, &c. 5083 perfons, occupying 1026 houfes; 2465 being males, and 2618 females: of whom 217 families are employed in trade and manufactures, and 180 in agriculture.

MOLE. See Nævus.

MOLLIA, in *Botany*, Ait. Hort. Kew. v. 2. 62. See Polycarpæa and Hagæa.

MOLTON, South, col. 2, l. 15, *r.* 1811—520—2739.

Molton, *North*, an adjoining parifh, containing 329 houfes, and 1526 inhabitants.

MOLYBDENA. See Mineralogy, *Addenda.*

MOLYBDENUM, in *Chemiftry*. The fpecific gravity of this metal, according to Hjelm, is 7.400; but according to Bucholz, who, from the greater heat he employed, obtained it in a more compact ftate, it is as high as 8.611. According to the experiments of this latter chemift, there are three oxyds of this metal, the *brown protoxyd*, the *blue* or *molybdous acid*, and the *white* or *molybdic acid*. Dr. Thomfon, from the experiments of Bucholz, deduces the weight of the atom of this metal to be 60.

MONAHAN, or Monaghan. Add—containing 725 inhabitants.

MONEY. See Political *Economy*.

MONFALOUT, *r.* See Manfalout.

MONKTON, l. 2, *r.* 1248.

MONMOUTH, l. 3, *r.* feven for fix; l. 4, *r.* 22,150—1501.—Alfo, a town of the diftrict of Maine, in the county of Kennebeck, containing 1262 inhabitants.

Monmouth, col. 3, l. 37, *r.* 1811; l. 38, *r.* 3503. Add—The number of houfes is 661; that of males 1630, and of females 1873, of whom 375 families are employed in trade and manufactures, and 146 in agriculture.

MONMOUTHSHIRE, l. 10.—In 1811, the county was returned as containing 11,766 houfes, and 62,127 perfons; 30,987 males, and 31,140 females: 5815 employed in agriculture, and 4812 in trade, manufactures, and handicraft.

MONONGALIA, l. 2, *r.* 12,793 perfons, of whom 351 were flaves in 1810.

MONOPTERUS, in *Ichthyology*, a genus of fifhes of the order Apodes; the characters of which are, that the body is anguilliform, the noftrils placed between the eyes, and the fin caudal. The only animal of this genus hitherto difcovered is the M. *Javanicus*, blackifh, with a very fharp-pointed tail. It is a native of the Indian feas, and is very common about the coafts of Java, where it is confidered as excellent food.

MONROE. Add—containing 5444 inhabitants, of whom 376 were flaves in 1810.

MONSON. Add—containing 1674 inhabitants.

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MONTAGUE, Edward, col. 2, l. 8, for fine fhips *r.* fire-fhips.

Montague, l. 4, *r.* 934.

Montague. See Mountague.

MONTENEGRINS, fo called from the Monte Negro, or Black mountain, near Cantaro, have been reckoned amongft the moft daring inhabitants of *Dalmatia;* which fee. The whole amount of thefe, who are fcattered over mountains, has been eftimated at about 60,000. All profefs the Greek religion, but with feveral remains of fuperftition. The Morlacs, and other inland tribes of Dalmatia, are honeft and fincere barbarians, and the drefs of their vaivodes fomewhat refembles the Hungarian. The general peace of Europe has reftored tranquillity and prefent fecurity to them.

MONTGOMERY, in America, l. 3, *r.* 2954, of whom 747 were flaves in 1810; l. 6, *r.* 41,214, of whom 712 were flaves; l. 10, *r.* 237; l. 12, *r.* 595; l. 14, *r.* 30; l. 15, *r.* 29,703; l. 16, add—containing 580 inhabitants; l. 17, having 2693 inhabitants; l. 18, *r.* 8430; l. 19, *r.* 1696 flaves; l. 21, *r.* 8409 inhabitants, of whom 1099 were flaves; l. 24, *r.* 17,980—7572; l. 28, *r.* 8026 inhabitants, of whom 2629 are flaves; l. 29, *r.* 12,650 inhabitants, of whom 1691 are flaves. Add—Alfo, a town of Somerfet county, in New Jerfey, having 2282 inhabitants.—Alfo, a townfhip of Franklin county, in Ohio, having 556 inhabitants.—Alfo, a county of Ohio, containing 7 townfhips, and 7722 inhabitants.

Montgomery, in Wales, col. 2, l. 35, *r.* 1811; l. 36, the borough and—932—442 males, and 490 females.

MONTGOMERYSHIRE, col. 6, l. *ult. r.* 1811—51,931—25,373—26,558. Col. 7, l. 1, *r.* 3164 families; l. 3, *r.* 6369.

MONTICELLO, a town of Georgia, in Randolph county, having 89 inhabitants.

MONTIQUE, a town of Suffex county, in New Jerfey, containing 661 inhabitants.

MONTROSE. In 1811 the burgh and parifh contained 1064 houfes, and 8955 perfons; *viz.* 3837 males, and 5118 females: 170 families being employed in agriculture, and 1529 in trade, manufactures, and handicraft.

MONTVILLE, l. 3, *r.* 2187.—Alfo, a town in Maine, in Lincoln county, with 864 inhabitants.

Montville *Plantation*, a townfhip of the fame, having 130 inhabitants.

MOON, a townfhip of Alleghany county, in Pennfylvania, having 1622 inhabitants.

Moon, *Half*, a townfhip in Centre county, in Pennfylvania, having 560 inhabitants.

Moon, *Firft* and *Second*, two townfhips of Beaver county, in the fame ftate, the former having 1035, and the latter 1245 inhabitants.

MOONSHEE, an Indian term fignifying a letter-writer or fecretary, and applied by Europeans to the native who inftructs them in the Perfian language.

MOONSTERLING, in *Geography*, a townfhip of Kentucky, in Montgomery county, with 325 perfons, of whom 76 were flaves in 1810.

MOORE, a townfhip of Northampton county, in Pennfylvania, having 1108 inhabitants.

MOOSH, the ancient Moxoene, called alfo Daran, a town of Armenia, occupying a fmall eminence, wafhed by the Euphrates, over which is a bridge of fifteen arches: badly built and thinly inhabited; but the adjoining country is fertile and populous. The natives of this diftrict, which is one of the Turkifh pachalics of Armenia, are a degenerate race, and faid to amount to 80,000 fouls; 12,000 of whom are Yezedis. Confiderable quantities of tobacco and manna are exported from hence.

MORAYSHIRE, col. 4, l. 32, *r.* 1811—6268—28,108; *viz.* 12,401 males, and 15,707 females: l. 32, *r.* 2635 families; l. 34, *r.* 1886.

MORELAND, l. 2, having 400—the other having 1692 inhabitants.

MORETON-Hampstead. In 1811 this parifh contained 337 houfes, and 1653 perfons; *viz.* 770 males, and

883 females: 263 families being employed in agriculture, and 43 in trade, manufactures, &c.

Moreton *in the Marsh*. In 1811 this parish contained 194 houses, and 928 persons; *viz.* 457 males, and 471 females: 60 families being employed in agriculture, and 91 in trade, manufactures, &c.

MORETOWN, a town of Chittenden county, in Vermont, having 405 inhabitants.

MORGAN, a town of Orleans county, in Vermont, having 135 inhabitants.—Also, a township of Greene county, in Pennsylvania, having 1621 inhabitants.—Also, a township of Knox county, in Ohio, having 388 inhabitants.—Also, a county of Georgia, having 2294 inhabitants.

MORIEVILLE Plantation, a township of Maine, in the county of Hancock, having 224 inhabitants.

MOROKINNEC, *r.* Morokinnee or Morotinnee.

MOROXYLIC Acid, in *Chemistry*, a name given by Klaproth to an acid principle obtained from a saline exudation from the *morus alba*, collected by Dr. Thompson in Sicily. This exudation contained the acid in question in combination with lime. When separated, it was found to possess the following properties:—It exists in the form of needle-like crystals, having the taste of succinic acid. It is not altered by exposure to the air. It dissolves readily in water and alcohol, and does not, like the moroxylate of lime, precipitate the metallic solutions. It is volatile, and may be sublimed without change; hence this is probably the best mode of obtaining it in a state of purity. The *moroxylates* are little known, and do not appear to possess remarkable properties.

MORPETH. In 1811 the borough contained 464 houses, and 3244 persons; *viz.* 1470 males, and 1774 females: 77 families being employed in agriculture, and 529 in trade, manufactures, or handicraft.

MORPHIA, the name which has been given to an alkaline principle existing in opium; the description of which, and of the other principles existing with it, will be found under opium. See Opium.

MORRIS, l. 3, for five *r.* ten. Col. 2, l. 6, *r.* 21,828—856 were slaves in 1810.—Also, a township of Washington county, in Pennsylvania, having 1679 inhabitants.—Also, a township of Greene county, having 944 inhabitants.

MORRISTOWN, l. 4, *r.* and in 1810, 3753 inhabitants, 214 being slaves.—Also, a town of Orleans county, in Vermont, having 550 inhabitants.

MORRISVILLE, l. 2, *r.* Bucks; add—having 961 inhabitants.

MORTLAKE. In 1811 the parish contained 346 houses, and 2021 persons; *viz.* 832 males, and 1189 females.

MOSUL, l. 2, after Nineveh, add—though others think that the village of Nunia, on the opposite bank of the Tigris, presents the position of this ancient city. It is situated in the pachalic of Bagdad; *dele* in the province of Diarbekir, situated:—l. 12, insert—The inhabitants are said to amount to 35,000 souls.

MOTACILLA, *r.* Rubecula.

MOTHER-KILL. Add—containing 7445 inhabitants.

MOULTONBOROUGH. Add—It contained, by the census of 1810, 994 persons.

MOUNT Holly, l. 3, *r.* 922.

Mount *Joy*, after Lancaster *r.* county, having 1551; at the close, add—having 636 inhabitants.

Mount *Pleasant*, l. 4, add—having 1105 persons.—Also, a township of Wayne county, with 522 persons.—Also, a township of Washington county, having 1165 inhabitants.—Also, a township of the same state, in Westmoreland county, having 1788 inhabitants.—Also, a township of Jefferson county, in Ohio, with 846 persons.

Mount *Tabour*, a town of Rutland county, in Vermont, with 209 inhabitants.

Mount *Vernon*. Add—containing 1098 inhabitants.—Also, a town of Hillsborough county, in New Hampshire, containing 762 persons.

MOUNTAGU. Add—See Montague.

MOUNTAIN Cork. See Mineralogy, *Addenda*.

MOUNTAINS, col. 7, under *Ireland*, instead of l. 3, insert—Sliebh Donard, a mountain in the county of Down—2500. Col. 13, l. 10, *r.* Varenius.

MUCILAGE, *Chemical Properties of*. See Gum.

MUCOUS Acid, in *Chemistry*. See Saclactic *Acid*.

Mucous *Membrane*, &c. See Membrane.

MUMBO-JUMBO, a kind of bugbear dressed in a masquerade habit, formed of the bark of trees, and suspended upon a tree at the entrance of the Mandingo towns in Africa. It is much employed by the Pagan natives in keeping their women in subjection; for as the Kafirs, or infidels, are not restricted in the number of their wives, every one marries as many as he can conveniently maintain; and as it frequently happens that the ladies disagree, family quarrels sometimes rise to such a height, that the authority of a husband can no longer preserve peace in his household. In such cases, the interposition of Mumbo-Jumbo is called for, and is always decisive. This strange minister of justice, who is supposed to be either the husband himself, or some person instructed by him, disguised in the above-mentioned dress, and armed with the rod of public authority, announces his coming, when called for, by loud and dismal screams in the woods near the town. He begins the pantomime at the approach of night, and as soon as it is dark enters the town, and proceeds to the *bentang* (a kind of stage erected in every town, answering the purpose of a town-hall), at which all the inhabitants immediately assemble. Every married female, not knowing for whom the visit is intended, is alarmed, but when summoned must appear; and the ceremony commences with songs and dances, which continue till midnight, about which time Mumbo fixes on the offender. This unfortunate victim being thereupon immediately seized, is stripped naked, tied to a post, and severely scourged with Mumbo's rod, amidst the shouts and derision of the whole assembly; and it is remarkable, that the rest of the women are the loudest in their exclamations on this occasion against their unhappy sister. Day-light terminates this indecent and unmanly revel.

MUNI, col. 2, l. 3 from bottom, for many-mothered, for *r.* many-mothered son.

MURÆNA, col. 3, *r.* Myrus.

MURIATE *of Ammonia*. See Sal *Ammoniac*.

MURIATIC Acid, Muriates, in *Chemistry*. See Chlorine.

MUSCI, col. 8, l. 18, *r.* shrinks; l. 7 from bottom, *r.* esexual.

MUSHROOMS, *Chemical Properties of*. See Fungi.

MUSKINGUM, l. 5, add—This county has 11 townships, and 10,036 inhabitants.

MUSOPHAGA, Plantain-*Eater*, in *Ornithology*, a genus of birds of the Picæ order; the characters of which are, bill stout, triangular; the upper mandible elevated at the base, above the front; both mandibles dentated at the edges; nostrils in the middle of the bill; tongue entire, thickish; feet with three toes before and one behind. This genus is constituted by the blackish-violet plantain-eater, with crimson crown and quill-feathers, and a white stripe beneath the eyes. The bird, which is highly elegant, is of of African origin, and is found in the province of Acra in Guinea, and is faid to live principally on the fruit of the mufa or plantain-tree. Dr. Shaw, in the Mufeum Leverianum, has defcribed this bird as a fpecies of cuckoo, under the name of Cuculus regius ; but in his Zoology it is a diftinct genus.

MUSTELA, col. 3, under B. *r.* BARBARA, Guiana weafel ; l. 3, *r.* Guiana.

MUSTELIA, in *Botany*, in memory of Mr. Muftel, who wrote, in Phil. Tranf. v. 63, fome " New Obfervations upon Vegetation."—Sprengel Tr. of Linn. Soc. v. 6. 152. t. 13.—This plant is faid to differ from EUPATORIUM, (fee that article,) in having five minute fcales accompanying the briftly feed-crown. How far fuch exift in any *Eupatorium*, or not, and whether they ought to make a generic diftinction, merits inquiry.

MYLOCARYUM, from μυλος, *a mill*, and καρυον, *a nut*, alluding to the four fpreading wings of the feed.—Willd. Enum. 454. Purfh 303. (Walteriana; Frafer's Cat.)—Clafs and order, *Decandria Monogynia*. Nat. Ord. *Ericæ*, Juff.

Eff. Ch. Calyx of five leaves. Petals five. Filaments fwelling and angular in the middle. Stigma feffile. Capfule winged, of three cells. Seeds folitary.

1. M. *liguftrinum*. Privet-leaved Buck-wheat-tree. Willd. n. 1. Purfh n. 1. t. 14. Sims in Curt. Mag. t. 1625. Ait. Epit. 371. Sm. Inf. of Georgia, v. 2. 135. t. 68, without a name.—On the dry borders of fwamps in Georgia, flowering in May and June. An elegant evergreen *fhrub*, eight to twelve feet high. *Purfh*. *Leaves* alternate, ftalked, obovate, acute, entire. *Flowers* white, fweet-fcented, in terminal clufters. *Fruit* pendulous, refembling feeds of Buck-wheat, with three or four wings.

MYOXUS. At the clofe, add—Dr. Shaw enumerates fome other fpecies, fuch as the Chryfurus, or gilt-tailed D., the M. guerlingus, or guerlinguet, and the African, or earlefs Dormoufe.

MYRIANDRUS. Add—According to Xenophon, it was a Phœnician city, a mart-town, and many merchant-fhips lay at anchor before it.

MYRICIN, in *Chemiftry*, a name given by Dr. John to the fubftance that remains after bees'-wax, or the wax of the *myrica cordifolia*, has been heated with alcohol. This fubftance is infoluble in water, ether, and alcohol, both hot and cold. It is foluble in the fixed and volatile oils, and does not precipitate from the former of thefe. It melts between 100° and 140°, and is fomewhat glutinous, but of the confiftence of wax. Its fp. gr. is .900.

MYTHOLOGY *of the Hindoos*, l. 26 from bottom, for ftories *r.* ftores.

N.

NACHITOCHES, l. 2, after Orleans, add—and in the territory of Orleans; its inhabitants in 1810 being 2870.

NACOGDOCHES, a fmall town of Louifiana, fituated in N. lat. 31° 27′. W. long. 24° 17′, on the Arroyo de la Nana, in a beautiful, healthy, well-watered country. This fmall town, and a few farms in the vicinity, are hitherto the only improvement made by the Spanifh emigrants after the revolution of 98 years. A tribe of Indians, called Nadacos, refides about 30 miles N. of Nacogdoches, upon the head-waters of the Angelina, where they were found near a century ago by the French and Spaniards. The Nadacos are a poor inoffenfive race, in peace with all their neighbours, both white and black.

NAGA, a name of the Hindoo mythological ferpent, otherwife called *Sefha;* which fee.

NAGANTEKA, in *Hindoo Mythology*, is a name of the hypogriff Garuda, the vehicle of the god Vifhnu. It means the deftroyer of ferpents. Another of its names is *Superna;* which fee.

NAIRIT, is one of the eight regents of the winds, or points of the heavens. He rules the fouth-weft quarter, and is fubordinate to Indra, regent of the firmament. (See INDRA.) Thefe rulers of the cardinal and intermediate points are fometimes called *Marut* (which fee). See alfo VIRUPAKSHA, meaning with a difagreeable countenance. Another of his names is Karbura. He has a *fakti* or confort affigned him, ufually named *Nirriti;* which fee.

NAIRN, l. *ult.* for 632 *r.* 613.

NAIRNSHIRE, col. 2, l. 46, number of houfes was 1746, and the inhabitants, &c.

NAKAL, one of the champions of the Hindoo heroic poem, entitled the *Mahabarat* (which fee). As that poem is fuppofed to be allegorical, and to reprefent the conflicts between man's virtues and vices, Nakal, one of the five fons of Pandu, is faid to be a perfonification of temperance, and is made the twin-brother of Sahadeva, or chaftity. Other commentators make them to reprefent beauty and wifdom. Their mother was Maderi, a wife of *Pandu;* which fee.

NAKSHATRA, in *Aftronomy*, is the name given by the Hindoos to the manfions which they affign to the moon. They feem to be the fame, though not exactly coinciding, with the lunar ftages of the Arabians, which they call *manzil*. The " Nakfhatras, or afterifms, marking the moon's path," are twenty-feven or twenty-eight in number. A table of them is given in the ninth volume of the Afiatic Refearches, by Mr. Colebroke, the prefident of the Afiatic Society. See alfo the fecond volume of the fame work, together with the Indian zodiac, accompanied by an effay on its antiquity, by fir W. Jones.

The Hindoos afcribe the invention of their folar and lunar

lunar zodiacs to Dakſha, who is mythologically repreſented as a ſon of Brahma, and they then give a free rein to their poetical imaginations, repreſenting the Nakſhatras as the daughters of Dakſha.

NALA, in *Hindoo Romance*, is a perſonage of conſiderable importance, though deſcribed as an ape. Others begat by the divine architect *Viſwakarma* (which ſee); and he is ſaid in the Ramayana to have been the builder of Rama's bridge, uſually called Adam's bridge, from the continent to the iſland of Ceylon, or Lanka. See Ceylon and Lanka.

NAMUKI, is the name of a friend and companion of Indra, the regent of the firmament.

NANCEMOND. See Nansemond.

NANDANA, the name of the garden, or city, aſſigned by Hindoo fabuliſts for the delightful reſidence of their demigod Indra, the regent of the firmament. (See Indra.) There are four cities or gardens of this name, and three of them are ſometimes ſaid to belong to Ganeſa, or Pattear. One of them is called Swa-nandana-puri, the ſelf-delighting city; nandana meaning delightful or happy.

NANDI, in *Hindoo Mythology*, is the name of the bull on which the god Siva rides. The bull, with the Hindoos, is the ſymbol of divine juſtice, as it is alſo of generation or production. See Siva.

NANSEMOND, l. 4, *r.* 10,324—4462.

NANTICOKE, l. 2, *r.* 2843 inhabitants, including 192 ſlaves in 1810.

NANTMILL for Nantrill, l. 2, add—the former contains 1544, and the latter 1188 inhabitants.

NANTUCKET, l. 13, *r.* 6807.

NARAKA, one of the receptacles for ſinners, or hells of the Hindoos. Of theſe, they have at leaſt ſeventy-one; and their names are given in the Inſt. of Menu, c. iv. v. 88, 89, 90.

NARAMEDHA, a term in the Sanſkrit language ſignifying the ſacrifice of a man. It cannot be doubted that human ſacrifices were formerly offered by ſome tribes of Hindoos, although it is ſaid, and may be reaſonably believed, that in theſe days the practice is wholly diſcontinued. (See Runeka.) To the goddeſs Parvati, or Bhavani, the conſort of Siva, under her name of Kali, or the *black goddeſs*, theſe offerings, it would appear, were uſually, if not always, made. The rules and regulations for this horrid ſacrifice are laid down in a chapter, emphatically called the ſanguinary chapter of the Kalika-Purana, which has been tranſlated by Mr. Blaquiere, and publiſhed in the fifth volume of the Aſiatic Reſearches, art. xxiii. No religious rite can be more minutely ordained and detailed.

Although it muſt appear evident, that human ſacrifices were formerly legal and practiſed among Hindoos, they are moſt pointedly prohibited in very ancient, as well as in more modern books: ſuch prohibition is, indeed, a farther, and of itſelf ſufficient proof of the exiſtence of the practice. In the Brahma Purana, (ſee Purana,) every Naramedha, or man-ſacrifice, is expreſsly forbidden; and in the fifth book of the *Sri-Bhagavat*, (ſee that article,) ſir W. Jones has pointed out the following emphatical words: "Whatever men in this world ſacrifice human victims, and whatever women eat the fleſh of male cattle, thoſe men and thoſe women ſhall the animals here ſlain torment in the manſions of Yama, (ſee Yama,) and, like ſlaughtering giants, having cleaved their limbs with axes, ſhall quaff their blood." Aſiatic Reſearches, vol. iii.

In the firſt Veda an emblematical or vicarial ſacrifice is ordained, in which men and animals are the victims, but are releaſed after certain ceremonies.

NARA-SINGHA, in *Mythology*, is the deſignation of the fourth avatara or incarnation of the Hindoo deity Viſhnu. It means literally *man-lion*, ſuch being the form in which this deſcent is related to have taken place.

Sir W. Jones ſurmiſed that this avatara, and the following of Vamana, (ſee Vamanavatara,) were allegorical references to the two preſumptuous monarchs Nimrod and Belus, under the names of Hiranyakaſipu and Beli, the former name meaning *with a golden axe*, or, according to other authorities, *clad in gold*. Hind. Panth. Aſ. Ref.

The three avataras, or deſcents of Viſhnu on earth, that preceded that which is the ſubject of this article, were the Matſya or fiſh, the Kurma or tortoiſe, and the Varaha or the boar; under each of which words, having the common denomination of avatara poſtfixed, ſome account of them will be reſpectively found. A liſt of the ten grand deſcents, or *daſavatara*, will be found under the article Vishnu. This is ſometimes written Nri Sinha.

NARASINHI, or Narsinhi, or *Nriſinhi*, is the name given to the Hindoo goddeſs Lakſhmi, who became thus incarnated to accompany her lord Viſhnu in his avatara or deſcent of Naraſingha, as ſufficiently explained under that article, and the others thence referred to.

NARAYANA, is a perſonification of rather a bold and apparently reprehenſible nature. "The waters are called *nara*, becauſe they were the firſt production of Nara, or the Spirit of God; and ſince they were his firſt *ayana*, or place of motion, he is thence named Narayana, or moving on the waters." Inſt. of Menu, c. I. v. 10. See Menu.

On the whole, Narayana ſeems to refer in character more to Viſhnu than to any other of the Hindoo deities.

NARAYANI, a name and form of the Hindoo goddeſs Lakſhmi. In this character, ſhe is conſidered as the Sakti or conſort of Narayana; which ſee, and Matri.

NARBETH, l. 9, *r.* 388.

NAREDA, or Narada, in *Hindoo Mythology*, a perſonage among the Hindoos, deemed the mythological offſpring of Brahma and Saraſwati. In the popular hiſtories of Kriſhna, Nareda is repreſented as his humble friend, on whom he paſſes many practical and whimſical jokes, metamorphoſing him into a woman, &c. But in more ſerious books, his character is more correſponding with the magnificence of his origin. He is repreſented as a wiſe legiſlator, great in arms, arts, and eloquence; and, indeed, of ſuch hiſtorical celebrity, that his actions are the ſubject of a Purana, named after him; ſome account of which is given under Purana. He was alſo an aſtronomer, and an exquiſite muſician. Hence Saraſwati, the patroneſs of ſcience and harmony, is ſaid to have been his mother. He farther invented the vina, a ſort of lute, which ſir W. Jones remarks as a ſingular fact, is otherwiſe called *katchapi*, having the ſame meaning as *teſtudo;* and Nareda being alſo a frequent meſſenger of the gods, to one another, or to favoured mortals. His character, in theſe and other points, reſembles that of Hermes, or Mercury.

NASH, l. 2, *r.* 7268—2897.

NASTICK, in *Philoſophy*, the name of a ſceptical ſect of Hindoos. The word in the Sanſkrit tongue means *negative*, and is intended to deſignate thoſe who do not believe the Veda. Individuals of more orthodox ſects call the Naſticks, materialiſts and atheiſts.

NASTURTIUM, in *Botany*, (ſee our former article,) is now adopted to deſignate the Water-creſs and its allies, ſeparated by Mr. Brown from Sisymbrium, (ſee that article,) ſect. 1.—Br. in Ait. Hort. Kew. v. 4. 109.—Claſs and

and order, *Tetradynamia Siliquosa*. Nat. Ord. *Siliquosa*, Linn. *Cruciferæ*, Juss.

Eff. Ch. Pod nearly cylindrical; valves concave, without rib or keel. Cotyledons accumbent. Calyx spreading.

N. *officinale*, (Sisymbr. Nasturtium; Linn. &c.), with *sylvestre*, *terrestre*, *amphibium*, *pyrenaicum*, and *sagittatum*, are the species mentioned in Hort. Kew. We have already described all but *pyrenaicum*, which is a well-known species.

NATICK, l. *ult.* *r.* in 1810, contained 766.

NATRON. See MINERALOGY, *Addenda*.

NATUNZ, in *Geography*, a town of Persia, in the province of Irak, 63 miles from Ispahan, and 43 from Cashan, situated on a very delightful spot, in a valley surrounded by high and rugged mountains; and famous for the salubrity of its climate, pears, peaches, and handsome females. It has a fort in the centre of the valley, an excellent warm bath, and an old mosque, with a very handsome mineral, said to have been built 300 years ago.

NAVY. Add—having 56 inhabitants.

NAXIA, l. 10 from bottom, after villages, add—Dr. Clarke (in vol. vi. of his Travels) states the whole population of the island, including women, at 18,000 persons, about 3000 of whom are Latins, and the rest Greeks.

NAZARETH, col. 2, at the close, l. 34, add—*Lower* Nazareth is a township containing 758, and *Upper* Nazareth is a township in the same county and state, containing 535 inhabitants.

NEATH, col. 2, l. 5, *r.* Saturday for Thursday; l. 6, add—It has three fairs; l. 12, *r.* was for is.

NECYDALIS, MINOR, add—in fields and about hedges in the summer months. CÆRULEA, add—in woods during the summer months.

NEEDHAM, l. 7, *r.* 1097.

NEJIFF, or MESHED ALI, a holy city, being the supposed burying-place of the caliph Ali, a town of the pachalic of Bagdad, nine fursungs from Hilleh, and four miles from Kufa, situated on a hill, at the bottom of which is an artificial lake. It was founded by Alexander the Great, and bore the name of Alexandria, which was afterwards changed into that of Hira, when it became the residence of a dynasty of Arabian princes, who fought under the Parthian banners against the emperors of Rome. Nejiff is not so large as Kerbela, but better built, and defended by a good wall, deep ditch, and lofty towers, lately renewed, under the apprehension of an attack from the Wahabees, who extend their ravages to the gates of the town. The tomb and mosque of Ali occupy an ample space in the middle of the city, and form a handsome structure, within a high wall, which an infidel subjects himself to death for attempting to pass. The governor of Meshed Ali is a Turk, but the population, not easily estimated on account of the constant influx of pilgrims, is like that of Kerbela, chiefly composed of Persian fanatics. The relics of almost all persons of rank are transported from the most remote parts of Persia to be interred either here, or at Kerbela, Kazameen, Koom, or Meshed in Khorassan.

NELSON, l. 2, *r.* 13,257—2908. Add—Also, a county of Virginia, containing 9684 inhabitants, of whom 4678 were slaves in 1810.

NEMESIA, in *Botany*, a name borrowed by Ventenat from Dioscorides, who is said to have applied it to some kind of *Antirrhinum*, we know not in what part of his writings. The present genus is nearly allied to *Antirrhinum*.—Venten. Malmais. 41. Ait. Hort. Kew. v. 4. 10.—Class and order, *Didynamia Angiospermia*. Nat. Ord. *Personatæ*, Linn. *Scrophulariæ*, Juss.

Eff. Ch. Calyx in five deep segments. Corolla spurred at the base; throat closed by the palate. Capsule compressed, of two cells, and two boat-like valves; partition linear, covered with seeds.

1. N. *chamædrifolia*. Germander-leaved Nemesia. Vent. n. 3. Ait. 1. (Antirrhinum macrocarpum; Ait. ed. 1. v. 2. 335. Willd. Sp. Pl. v. 3. 249.)—Leaves ovate, serrated, stalked. Flowers on axillary stalks, solitary.—Native of the Cape of Good Hope. A perennial, herbaceous, smooth, green-house plant, flowering all summer. *Flowers* deep crimson.

2. N. *bicornis*. Horned Nemesia. Ait. n. 2. See ANTIRRHINUM, n. 24. (Linaria; Burm. Afr. 211. t. 75. f. 3.)—Leaves lanceolate, with tooth-like serratures. Cluster terminal, rather lax.—From the same country. Annual. The specific name applies to the *capsule*.

3. N. *fœtens*. Fœtid Nemesia. Vent. n. 1. t. 41.—Leaves linear-lanceolate; upper ones entire. Clusters terminal, dense. Stem shrubby.—From the Cape. *Flowers* white, streaked with red; palate yellow.

4. N. *linearis*. Linear Nemesia. Vent. n. 2.—Leaves linear, entire, sessile. Clusters corymbose.—Described by Ventenat from Jussieu's herbarium.

NEPANESE, in *Geography*, a township of Lycoming county, in Pennsylvania, having 298 inhabitants.

NEPER, col. 1, l. 22 from bottom, for *Neper's rods r. Neper's bones.*

NEPHELINE, or SOMMITE. See MINERALOGY, *Addenda*.

NEPHRITE. See MINERALOGY, *Addenda*.

NERANTEKA, in *Hindoo Mythology*, is the name of a malignant demon, mentioned often in their heroic poems, slain by Krishna, and by other divine warriors. The name generally means destroyer of men.

NERKA, one of the many hells of the Hindoos. See NARAKA.

NEROS, in *Chronology*, an ancient Chaldæan period of 600 years, and equal to the Sosos of 60 years multiplied by 10.

NESENPACK, in *Geography*, a township of Luzerne county, containing 460 inhabitants.

NESHANSACK, a township of Mercer county, in Pennsylvania, having 700 inhabitants.

NETCHEZ, or western branch of the Sabine, a river of Louisiana, formed from the united streams of the Angelina, Attoquaque, Nena, and the Attascocito. The Netchez, though not so long as the Sabine, exceeds it as to quantity of water. The lands watered by this river, and its tributaries, are of superior quality to the country on the Sabine; but sterile compared with those on the margin of many rivers in Louisiana.

NETTING. Add—The *netting* is used in different parts of a ship; thus, the *boarding-netting* is thrown over the sides, to prevent the enemies boarding. *Bowsprit-netting* is fastened near the outer end of the bowsprit, to the man-ropes or horses, to stow away the fore-topmast-staysail and jib. *Breastwork quarter and waist nettings* are used to keep the hammocks in the stantions. *Head-netting* is fastened to the horses in the head and upper rail, to prevent the men from slipping overboard. *Quarter-deck netting* is suspended over the officers' heads, to prevent any thing falling thereon. *Top-netting* is fastened to the rail, shrouds, and top, to preserve the men from falling.

NEWARK, in America, l. 2, add—having 88 inhabitants; l. 12, add—and in 1810 contained 8008 inhabitants, of whom 369 were slaves.

NEW BRAINTREE, l. 2, after Worcester, insert —Massachu-

—Maſſachuſetts; l. 5, add—in 1810 contained 912 inhabitants.

NEWBURY, or Newberry, l. 2, add—It contained, in 1810, 13,964 perſons, of whom 4006 were ſlaves; l. 3, *r.* 1796; l. 10, *r.* 1363; l. 13, *r.* 5176.

Newbury Port, l. 4, *r.* 7634.

NEW CANAAN, a town of Fairfield county, in Connecticut, containing 1599 perſons.

NEWCASTLE, l. 5, *r.* 9 hundreds, and 24,429; l. 6, *r.* 1087; l. 16, add—It contained 2340 inhabitants, including 174 ſlaves; l. 19, *r.* 592; l. 26, *r.* 1232. At the cloſe, add—Alſo, a townſhip of Muſkingum county, in Ohio, having 370 perſons.

Newcastle-*in-Emlyn*, col. 2, l. 2, for Saturday *r.* Friday. Add—A few miles below the town is a beautiful ſalmon-leap.

NEW CHESTER. Add—containing 895 inhabitants.

NEW DURHAM, a town of Strafford county, in New Hampſhire, having 888 inhabitants.

NEW FAIRFIELD, a town of Connecticut, in the county of Fairfield, having 772 inhabitants.

NEW-FANE, l. 3, *r.* 1276.

NEWFIELD, a town of Maine, in the county of York, with 815 inhabitants.

NEW GRANTHAM. Add—containing 864 inhabitants.

NEW HAMPSHIRE. Add—See United States.

NEW HAMPTON, l. 4, add—and contains 1293 inhabitants.

NEW HARTFORD. Add—containing 1507 inhabitants.

NEW HAVEN, in America, l. 4, *r.* 18; l. 5, *r.* 1810; containing 37,064 perſons. For other particulars, beſides thoſe which have been mentioned, ſee *New* Haven, and United States.

NEWINGTON, l. 3, *r.* 508.

Newington, *Stoke*, a village of the county of Middleſex, in the Finſbury diviſion of Oſſulſtone hundred, and pariſh of St. Mary's. In 1811 the pariſh contained 342 houſes, and 2149 perſons; *viz.* 890 males, and 1259 females.

NEW KENT, l. 3, *r.* 6478 inhabitants, of whom 3725 were ſlaves in 1810.

NEWLIN. Add—containing 780 inhabitants.

NEW LONDON, l. 4, *r.* 14; l. 6, *r.* 1810—34,707—77; l. 14, *r.* 3238; l. 26, *r.* 692. At the cloſe, add—Alſo, a townſhip of Pennſylvania, in Cheſter county, containing 1018 perſons.

NEWMARKET, in America, l. 3, *r.* 1061. Col. 2, l. 1, add—Alſo, a townſhip of Highland county, in Ohio, containing 978 inhabitants.

NEW MILFORD, l. 7, add—In 1810, the inhabitants were 3537. At the cloſe, add—it has 797 inhabitants.

NEWPORT, in Cornwall. In 1811, the pariſh of St. Stephen's contained 159 houſes, and 896 perſons; *viz.* 433 males, and 463 females.

Newport, col. 1, l. 4, *r.* 1427; l. 7, *r.* 16,294; l. 19, *r.* 7907. Col. 2, l. 9, add—containing 566 inhabitants. Add—Alſo, a townſhip of Waſhington county, in Ohio, having 323 inhabitants.

NEWRY, a townſhip of the diſtrict of Maine, in the county of Oxford, having 202 inhabitants.

NEWTON, l. 3, *r.* 1709; l. 5, add—Alſo, a townſhip in Bucks county, having 902 inhabitants:—l. 8, *r.* 454; add—Alſo, a townſhip of Delaware county, in Pennſylvania, containing 601 inhabitants.—Alſo, a townſhip of Cumberland county, in the ſame ſtate, having 1312 inhabitants.—Alſo, a townſhip of Miami county, in Ohio, having 556 inhabitants.—Alſo, a townſhip of Muſkingum county, in Ohio, having 802 inhabitants.—Alſo, a townſhip of Trumbull county, in Ohio, having 490 inhabitants.

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NEWTON-NOTTAGE, a pariſh formed by the hamlets of Newton and Nottage, ſituated in the county of Glamorgan, near the Briſtol Channel. In 1811, the former hamlet, at a ſmall diſtance from Pyle, that lies in the road between Cowbridge and Neath, contained 55 houſes, and 254 perſons; *viz.* 117 males, and 137 females: and the latter contained 43 houſes, and 217 perſons; *viz.* 107 males, and 110 females.

NEWTOWN, l. 3, containing 2834 perſons; l. 14, having 1951 inhabitants; l. 17, and 2082 perſons; l. 25, add—See Newton; l. 27, add—See alſo Newton.

NEW VINEYARD, l. 1, for Kennebeck *r.* Somerſet. Add—containing 484 inhabitants.

NEW YORK. See *New* York.

NIAGARA, l. 1, inſert—a county, &c.; l. 2, add—the county including 8971 inhabitants.

NIBBED-Hooks, in *Rope-making*, are iron winches uſed to hang the yarn on to harden, and to lay ſmall ropes on.

NICHOLAS, l. 2, *r.* 4898 inhabitants, 509 being ſlaves.

NICKEL, in *Chemiſtry*. The weight of an atom of this metal, according to the recent determinations of Dr. Thomſon, is 33.75, from which datum the compoſition of its ſalts may be eaſily aſcertained. See Atomic *Theory*.

At the end of the article in the Cyclopædia, add—From the experiments of Tupputi, it appears that preparations of nickel poſſeſs poiſonous properties.

Nickel-*Ore*. See Mineralogy, *Addenda*.

NICOTIN, in *Chemiſtry*, the name which has been given to a peculiar principle in the leaves of the *nicotiana latifolia*, or *tobacco*, and to which that plant owes its peculiar properties. This ſubſtance was obtained by Vauquelin from the juice, by a proceſs ſufficiently complicated. When pure it is colourleſs. It has an acrid taſte, and the peculiar ſmell which diſtinguiſhes tobacco. It occaſions violent ſneezing. It is ſoluble both in alcohol and water; the ſolutions are colourleſs, and diſtinguiſhed by the peculiar taſte and ſmell of nicotin. It is precipitated from its ſolutions by tincture of nutgalls. It is volatile, and ſomewhat reſembles in ſhort the volatile oils in its properties. It poſſeſſes poiſonous properties. See further in the Annales de Chemie, lxxi. 139.

NIGER. Add—It has been ſuppoſed that the Niger terminates in the Nile; but this hypotheſis, though maintained by ſeveral modern travellers, *viz.* Hornemann, Jackſon, &c. is the moſt unfounded of any, and the leaſt conſiſtent with acknowledged facts. The ſuppoſition adopted by Mr. Park is, that the Niger terminates in the river Congo, or, as it is ſometimes called, the *Zaire;* which ſee. Another ſuppoſition, reſpecting the termination of the Niger, is that of a German geographer, Mr. Reichard, publiſhed in the "Ephemerides Geographiques," in Auguſt 1808, who repreſents the Niger, after reaching Wangara, as ſeeking a direction towards the ſouth, and being joined by other rivers from that part of Africa, taking a great turn from thence towards the ſouth-weſt, and purſuing its courſe until it approaches the north-eaſtern extremity of the gulf of Guinea, whence it divides and diſcharges itſelf by different channels into the Atlantic; after having formed a great Delta, of which the Rio del Rey conſtitutes the eſtuary of the Rio Formoſo, and Benin river the weſtern branch,

branch. Park's Travels, vol. ii. Appendix, N° iv. p. clxxxiv.

NILA, in *Mythology*, is one of the many names of the Hindoo goddefs Parvati. The word means blue or dark-azure, and is one of the Sanfkrit names for the Nile, as is alfo Kali.

NILAKANT'HA, a name of the god Siva, meaning blue-throated, fimilar to Shitakantha, or Shitakoontha, under which word fome account is given of the origin, &c. of the appellation.

NILE, in *Geography*, a town of Ohio, in the county of Scioto, having 396 inhabitants.

NIMMISHITHAN, a townfnip of Ohio, in Stark county, having 385 inhabitants.

NIOBE, in *Ancient Mythology*, was, according to the hiftorians who acquiefce in the authority of Diodorus Siculus and Apollodorus, the daughter of Tantalus, and fifter of Pelops. Pelops removing from Phrygia, carried his fifter with him to that part of Greece which afterwards took his name; and for the fecurity of his new dominions, married her to Amphion, a prince eminently powerful and eloquent, who fortified Thebes with walls. Niobe became, in confequence of that marriage, the mother of a numerous progeny; and was thus led to defpife Latona, who in revenge induced Apollo and Diana to put all her children to death, in the manner related by Ovid and Plutarch. This epifode, as it is faid by fome writers, contains a hiftory no lefs true than tragical. The city of Thebes was defolated by a peftilence, which deftroyed all Niobe's children; and as contagious diftempers have been attributed to the immoderate heat of the fun, it was reported that Apollo flew them with his darts. Niobe, after the death of her children, and hufband, who, overpowered with grief, deftroyed himfelf, returned to Lydia, and ended her days near mount Sipylus, upon which was feen, according to Paufanias, a rock that, viewed at a diftance, refembled a woman in deep melancholy and diftrefs. Sophocles, in his Antigone, fays, that this princefs was not at firft transformed into a ftone; but that the gods, at her requeft, granted her that favour afterwards. The fame poet, in his Electra, fays, that Niobe fheds tears in a tomb of ftone.

NIPPER, in *Rope-making*, is formed of two fteel plates, through which the yarn paffes from the tar-kettle, which are fo adjufted by weights and a lever, that the yarn receives no more tar than is required, and what is fqueezed out drops into a trough and returns into the kettle.

NIRRITI, is the name of a Hindoo deity, confort or *fakti* of Nirrit or Nairit. (See the latter article.) She fhares with her hufband the regency of the fouth-weft quarter of the heavens.

NISHAPOUR, anciently the greateft and richeft city of Khoraffan in Perfia, and one of the four royal cities of the province, is feated on a plain, formerly irrigated by about 12,000 aqueducts, which have fallen into decay. It is faid to have been founded by Taimuras, and deftroyed by Alexander the Great. After the lapfe of many years, it was rebuilt by Sapor I., and his ftatue was feen in it till the Arabs deftroyed it. This city was taken in the 548th year of the Hegira by the Tartars, who fo completely ruined it, that when the original inhabitants returned to take poffeffion of it, they could not diftinguifh their own houfes. After having regained its former fplendour, it was again taken and pillaged by the Tartars under Gengis Khan; fo that the prefent inhabitants do not exceed the number of 15,000. The ruins of the city are nearly ten furfungs in circumference. It is at prefent fubject to the dominion of the king of Perfia, and has nine diftricts dependent upon it, each of which has about ten walled villages. The fruits are abundant and delicious.

NITRE, *Native*. See Mineralogy, *Addenda*.

NITRIC Acid, Nitrates, &c. in *Chemiftry*. The correct proportions in which azote and oxygen combine, will be found in the tables appended to Atomic *Theory*, to which therefore we refer our readers. We fhall only ftate here the compofition of nitric acid, which is 5 atoms oxygen + 1 atom azote: hence the weight of its atom is 67.5, from which datum the compofition of the nitrates can be accurately determined.

NIVENIA, in *Botany*, a noble genus, dedicated by Mr. Brown to Mr. James Niven, an intelligent obferver and collector of Cape plants, fent out by Mr. Hibbert.—Br. Tr. of Linn. Soc. v. 10. 133. Ait. Hort. Kew. v. 1. 201. (Paranomus; Salif. Farad. at p. 67.)—Clafs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juff. Br.

Eff. Ch. Corolla four-cleft, regular. Anthers funk in the concave tips of the fegments. Nectary four fcales. Stigma vertical. Nut fuperior. Involucrum of four leaves, containing four flowers; hardened when in fruit.

Ten fpecies are defcribed, all fhrubs, natives of hills at the Cape of Good Hope. *Leaves* fcattered, doubly pinnatifid, thread-fhaped; the upper ones, in fix of the fpecies, undivided and flat. *Flowers* fpiked, capitate, bracteated, purplifh.—Four fpecies are mentioned in Hort. Kew.

1. N. *Sceptrum*. (Protea Sceptrum; Linn. Suppl. 116. Sparm. Stockh. Tranf. for 1777. 53, not 55, t. 1.)—Upper leaves obovate or lanceolate, flattifh; fimple at the edges. Corolla filky, with clofe hairs.

2. N. *fpathulata*. (P. fpathulata; Thunb. Prot. n. 58. t. 5.)—Upper leaves broader than long, hooded, bordered. Involucrum obtufe. Corolla bearded. Style fmooth. Stigma oblong-clubfhaped.

3. N. *fpicata*, and 4. N. *crithmifolia*, the latter P. Lagopus; Andr. Repof. t. 243, have all the *leaves* doubly pinnatifid.

NOBLEBOROUGH, l. 3, *r.* 1206.

NOCK, the foremoft upper corner of boomfails, and of ftayfails cut with a fquare tack.

NOCKAMIXON, l. 2, *r.* 1209.

NOCTURN, Liturgic, the divine office of the night, as diftinguifhed from that of the day. The latter confifted of the feven canonical hours, the former of three nocturns, each confifting of feveral pfalms, leffons, &c.; and it was heretofore cuftomary to interrupt the fleep three different times for the performance of them.

NOOTH's Apparatus. See Laboratory.

NORFOLK, col. 2, l. 15, add—By the parliamentary returns in 1811, this county contained 33 hundreds, 3 boroughs, *viz*. King's Lynn, Thetford, and Great Yarmouth, and one city, *viz*. Norwich; 51,774 houfes, occupied by 291,999 perfons; 138,089 being males, and 153,910 females: of whom 31,454 families are employed in agriculture, and 23,082 in trade and manufactures.

Norfolk, in America, l. 4, *r.* 22; l. 6, *r.* 31,245; l. 8, *r.* 18,679—5647; l. 4 from bottom, *r.* 1441.

NORMAN. Add—Alfo, a fquare fid of oak, or fhort carling, fixed through the head of the rudder of Eaft India fhips, to prevent the lofs of the rudder, in cafe of its being unfhipped. Alfo, a fhort wooden bar with a head, ufed in one of the holes of the windlafs when there is little ftrain on the cable.

NORRIDGEWOCK, l. 2, add—and county of Somerfet; l. 3, *r.* 880.

NORTH Beaver. See Beaver.

North-*Weſt Fort*, a hundred of Suſſex county, in the ſtate of Delaware, containing 3293 perſons, of whom 382 were ſlaves in 1810.

North-*Weſt Paſſage*, l. 15, after Labrador coaſt, add—nor of the Cortelears of Portugal in 1500, nor of the Cartiers and others from France in 1508 and 1534; nor of Gomez, &c. from Spain in 1524, &c.; nor of ſir Hugh Willoughby in 1553, of Richard Chancellor and Steven Burrough in 1555 and 1556:—l. 19, ſuch as Edward Fenton in 1577, Arthur Pet and Charles Jenkinſon in 1580, ſir Humphry Gilbert in 1583, John Davis in 1585, 1586, and 1587, Cornelis Cornelisſon, Brands Yſbrants, and William Barentz of the United Provinces, in 1594, of Barentz in 1595 and 1596, William Adams in 1596, George Weymouth in 1602, James Hall in 1605–6–7, John Knight in 1606, Henry Hudſon in 1607–8–9–10, ſir Thomas Batlon in 1612, James Hall in 1612, Gibbons in 1614, Robert Bylot in 1615, Bylot and William Baffin in 1616, Jens Mank, a Dane, in 1619:—l. 41, and, after the failure of Samuel Hearne in 1760, 1770, Conſtantine John Phipps (lord Mulgrave) in 1770, captain Cook, &c. Col. 2, l. 39, add—our limits will not allow our detailing the voyages of captain (now admiral) Lowenorn, lieutenant Egéde, and lieutenant Rothé, Danes, in 1786 and 1787, nor the travels of Alexander Mackenzie in 1789, nor thoſe of Charles Duncan in 1790 and 1791, nor the diſcoveries made by the Ruſſians on the northern coaſt of Siberia during the 18th century, nor the voyages for farther diſcovery, undertaken in the early part of the 19th century by lieutenant Kotzebue 1815 to 1818, of John Roſs, David Buchan, William Edward Parry, and John Franklin in 1818. Add to the references—Barrow's Chronological Hiſtory of Voyages into the Arctic Regions, &c. 8vo. London, 1818.

NORTHAMPTON, col. 9, l. 7, for 1623 *r.* 1576.

Northampton, in America, l. 4, *r.* 32—38,145; l. 5, *r.* 1176; l. 8, *r.* 710; l. 10, *r.* 13,082; l. 11, *r.* 7258; l. 17, *r.* 7474; l. 18, *r.* 3350. Col. 2, l. 2, *r.* 2631. Add at the cloſe—In 1810 it contained 4171 inhabitants.

NORTHAMPTONSHIRE, l. 24, *r.* 28,318. Add—68,279 being males, and 73,074 females, of whom 12,100 families were employed in trade and manufactures, and 15,235 in agriculture.

NORTHBOROUGH, l. 3, *r.* 794.

NORTHBRIDGE, l. 3, *r.* 713.

NORTHFIELD, l. 3, *r.* 426; l. 6, *r.* 1218; l. 10, *r.* 1057.

NORTH HAMPTON, l. 2, *r.* 651.

NORTH HAVEN, l. 4, *r.* 1239.

NORTH HERO. See Hero.

NORTH KINGSTOWN, l. 5, *r.* 2957; l. 6, *r.* 7 ſlaves in 1810.

NORTH PORT, l. 2, *r.* 780.

NORTH STANNINGTON, a townſhip of New London county, in Connecticut, having 2524 perſons.

NORTHUMBERLAND, in America, l. 1, for Grafton *r.* Coos; l. 4, *r.* 281; l. 7, *r.* 26, *r.* 36,327; l. 15, *r.* 8308 inhabitants, of whom 3847 were ſlaves in 1810.

NORTHWOOD, l. 5, *r.* 1095.

NORTH YARMOUTH, l. 5, *r.* 3295.

NORTON, l. 3, *r.* 1598.

NORWALK, col. 2, l. 1, *r.* 2983.

NORWAY, l. 3, *r.* Oxford; l. 4, *r.* 1010.

NORWEGAN, a townſhip of Berks county, in Pennſylvania, having 415 inhabitants.

NORWICH, col. 7, l. 39, add—By the parliamentary returns in 1811, the city of Norwich contained 8336 houſes, occupied by 37,256 perſons; the males being 15,664, and the females 21,592: of whom 8410 families were employed in trade, manufactures, and handicraft, and 388 in agriculture.

Norwich, in America, l. 3, *r.* 1812; l. 5, *r.* 968; l. 17, *r.* 2976 inhabitants. Norwich, except the city, contains 552 inhabitants.

NOTOCERAS, in *Botany*, from νῶτος, *the back*, and κέρας, *a horn*.—Brown in Ait. Hort. Kew. v. 4. 117.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Valves of the pod horned at the back, near the top. Cotyledons accumbent. Stigma capitate. Calyx nearly erect, equal at the baſe.

1. N. *canarienſis*. Canary Horn-creſs. Ait. n. 1. (Eryſimum bicorne; Ait. ed. 1. v. 2. 394. Willd. Sp. Pl. v. 3. 514.)—Brought by Mr. Maſſon, from the Canary iſlands. A ſmall, branched, annual plant, covered with cloſe briſtles; the *leaves* lanceolate, entire; *flowers* yellow, minute.

NOTTINGHAM, in America, l. 3, *r.* 1063; l. 6, *r.* containing 2615 inhabitants. Add—Alſo, a townſhip of Waſhington county, in Pennſylvania, having 2037 inhabitants.—Alſo, a townſhip of Ohio, in Tuſcarawa county, having 452 inhabitants. Col. 2, l. 2, *r.* 1376.

NOTTINGHAMSHIRE, l. 16, *r.* 31,344; l. 17, after number, add—the males being 79,037, and females 83,843.

NOTTOWAY, a county of Virginia, containing 9273 inhabitants, of whom, in 1810, 6368 were ſlaves.

NUMBERS, col. 2, l. 2, after " and $\frac{220}{2}+$ inſert " $\frac{220}{4}+$." Col. 18, &c. $x^a - x$.

Numbers, *Planetary*, col. 5, l. 10, for $25^d\ 24^h\ 8^m$ *r.* $25^d\ 14^h\ 8^m$. Col. 6, l. 17 from bottom, for ſucceſsful *r.* ſucceſſive. Col. 21, l. 26, for $\frac{2064}{4355}$ *r.* $\frac{2064}{3355}$.

NUX Vomica, *Chemical Properties of*. MM. Pelletier and Caventou, in analyſing the nux vomica and St. Ignatius's bean, obſerved a new vegetable alkaline ſubſtance, having the following properties.

It is ſlightly ſoluble in water, very ſoluble in alcohol, reſtores the colour of turnſole after it has been reddened with an acid, does not redden turmeric, combines with acids which it ſaturates, and forms with them cryſtallizable ſalts. The diſcoverers have ſuggeſted the name *Vauqueline* for this ſubſtance, in honour of the celebrated chemiſt Vauquelin, who is ſaid to have firſt diſcovered the alkaline properties of a ſubſtance obtained by him from the *daphne alpina*.

NYCTERIUM, in *Botany*, a genus entirely artificial, made by Ventenat in Hort. Malmaiſ. 85, out of ſuch ſpecies of Solanum, (ſee that article,) as have irregular flowers.—Sims in Curt. Mag. 1801.—M. Dunal has very judiciouſly, as we preſume to think, kept *Solanum* entire.

O.

OAKHAM, in America, l. 3, *r.* 848.

OBSIDIAN. See MINERALOGY, *Addenda.*

OCATAHOOTA, in *Geography*, a parifh of New Orleans, in Louifiana, refembling in its foil and produce *Ouachitta;* which fee.

OCTOMERIA, in *Botany*, ὀκτὼ, *eight*, and μερις, *a portion, or fupply*, becaufe of the eight maffes of pollen.—Brown in Ait. Hort. Kew. v. 5. 211.—Clafs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ.*

Eff. Ch. Lip articulated with a kind of claw which bears the petals. Anther a moveable deciduous lid. Maffes of pollen eight.

We know not of how many fpecies this genus is compofed. One only occurs in Hort. Kew.

1. O. *graminifolia*. Grafs-leaved Octomeria. Ait. n. 1. (Dendrobium graminifolium; Willd. Sp. Pl. v. 4. 135. Epidendrum graminifolium; Linn. Sp. Pl. 1353. Helleborine graminea repens biflora; Plum. Ic. 171. t. 176. f. 1.)—Stem elongated, bearing one lanceolate leaf, and a pair of ftalked flowers. Root creeping.—Native of the Weft Indies; imported by rear admiral Bligh, in 1793. Few botanifts have gathered or examined this plant. Burmann, without much fagacity, thought it a *Convallaria.*

OGHAM, col. 3, l. 30, for Dfxtfrt *r.* Dfxtfrb, and for bfnfdkth *r.* bfnfdktb.

OGLETHORPE, l. 3, containing, with its town Lexington, 12,297 inhabitants, of whom the flaves in the county are 5322, and in the town 113.

OHIO, l. 8, add—Bradbury, in his "Travels," eftimates the area of the Ohio ftate at 43,860 fquare miles, and its population at 230,760 fouls; fo that by this ftatement there was, in 1810, only one inhabitant in one and a half fquare mile, and allowing 640 acres to the fquare mile, one inhabitant in every 900 acres. At the clofe, add—For a later and more correct account of the number of counties and amount of population in this ftate, fee UNITED STATES. Col. 5, l. 3 from bottom, add—This river derives its waters from an area of 198,464 fquare miles, four times the extent of England and Wales, the furface of which is fuppofed to be 49,450 fquare miles, and comprehended between the parallels of 35 and 43 degrees of latitude.

OHIO, county of Virginia, l. 4, *r.* 8175 inhabitants, of whom 440 were flaves in 1810; l. 6, *r.* 3682; l. 7, *r.* 497. Add—Alfo, a townfhip of Alleghany county, in Pennfylvania, having 832 inhabitants.—Alfo, a townfhip of Beaver county, in Pennfylvania, having 1128 inhabitants.—Alfo, a town of Ohio, in the county of Clermont, having 1803 inhabitants.—Alfo, a town of Gallia county, in Ohio, having 350 perfons.—Alfo, a townfhip of Knox county, in Indiana territory.

OIL *of Caraway*, l. 1, for CARUA *r.* CARUM.

OIL *Creek.* Add—Alfo, a townfhip of Crawford county, in Pennfylvania, having 340 inhabitants.

OLEA, l. 4 from bottom, for Calyx *r.* Corolla.

OLEFIANT GAS, *Chemical Compofition of.* See ATOMIC *Theory* and CARBON.

OLEÏC ACID, in *Chemiftry*, obtained by Chevreul from a foap made by digefting hog's-lard in potafh ley. When this foap is put into water, a portion was depofited in pearl-coloured fcales, which was the *margarate of potafh.* (See MARGARIC *Acid.*) Another portion, confifting of the *oleate of potafh*, mixed with fome *margarate* of potafh, remained in folution. Thefe two were then feparated, and the oleïc acid obtained in a ftate of purity. Oleïc acid when pure is an oily fluid, without tafte or fmell. But moft commonly it has a rancid odour, and a yellow or brown colour, fomewhat refembling olive-oil. Its fpecific gravity is .899. Sometimes it remains liquid at 35°, though other varieties of it congeal at 43°, or even higher. When congealed it cryftallizes in needles. It reddens litmus with great energy. It is infoluble in water, but very foluble in alcohol. It combines readily with the alkalies and earths, forming falts, or rather foaps, none of which poffefs very remarkable properties. Dr. Thomfon, from Chevreul's experiments, eftimates the weight of its atom at 360. It may be obtained from moft other animal fats as well as hog's-lard.

OLEY, in *Geography*, a townfhip of Berks county, in Pennfylvania, having 1284 inhabitants.

OLIVINE. See OLIVINE, and MINERALOGY, *Addenda.*

O'M, col. 5, l. 31, for refearches *r.* refearchers; l. 42, *r.* monofyllabic; l. 4 from bottom, *dele* of, and *r.* one of their. Col. 6, l. 24, *r.* compofed of a, &c.

ONELEG, in *Geography*, a townfhip of Ohio, in Tufcarawa, having 610 inhabitants.

ONONDAGO, l. 16, *r.* 25,987, of whom, in 1810, 50 were flaves.

ONSLOW, l. 3, *r.* 6669—2299.

ONTARIO, l. 3, number of inhabitants in 1810 was 43,032, of whom 212 were flaves.

OPÆTHUS, TOURACO, in *Ornithology*, a genus of birds of the order of Picæ; the characters of which are, beak fhort, convex above, rather bent, compreffed laterally, and denticulated from the middle to the tip; noftrils covered with fhort filky feathers; feet fimple, with two toes before and two behind. One fpecies of this genus is known, which is a native of Africa, and one of the moft beautiful of the birds that are found in that quarter of the globe. It feeds on fruits, is eafily tamed, and capable, as it is faid, of turning its exterior hinder toe either backwards or forwards. This is the CUCULUS *Parra* of the Linnæan fyftem. Shaw.

OPAL. See MINERALOGY, *Addenda.*

OPELOUSAS, in *Geography*, a county and parifh of the territory of Orleans, containing, in 1810, 5048 inhabitants. This territory prefents a great variety of foil, or, if we except the fugar-cane and orange-tree, the cultivation of moft valuable vegetables has fucceeded. Cotton, indigo, and tobacco, have been and the former now is the ftaple commodity of the country; to which we may add, cattle, hides, leather, cheefe, beef, and pork.

OPHIDIUM, l. 25, add—See Dr. Brouffonet's defcription of this fifh in the Phil. Tranf. vol. lxxi.

OPHIOPOGON, in *Botany*, from οφις, *a ferpent*, and πωγων, *a beard*, a tranflation of the Japanefe name, *Riuno Fige*, but the application is not very evident.—Ker in Curt. Mag. 1063. Ait. Hort. Kew. v. 2. 281.—Clafs and order, *Hexandria Monogynia*. Nat. Ord. *Sarmentaceæ*, Linn. *Afparagi*, Juff.

Eff. Ch. Corolla half fuperior, permanent. Anthers feffile. Stigma fimple. Berry with one feed.

1. O. *japonicus*. Japan Snake's-beard. Curt. Mag. t. 1063. (Convallaria japonica; Linn. Suppl. 204. Redout. Lil. t. 80. Mondo; Kæmpf. Am. Exot. 823. t. 824.)—Native of Japan, where it ferves as edgings in flower-gardens. A hardy graffy plant, with clufters of greenifh-white *flowers*, and blue *berries*. The knobs of the *root* candied, are efteemed medicinal.

OPIUM, *Chemical Properties of*. M. Derofne, in 1803, publifhed an analyfis of opium, in which he announced the exiftence of a peculiar cryftallizable fubftance to which that drug owes its narcotic properties, whence it was named the NARCOTIC *Principle* (which fee). Soon afterwards, M. Sertürner publifhed an analyfis of the fame fubftance, but the refults of the two chemifts were fo different, as to render both doubtful. This latter chemift, however, purfued the fubject, and at length fucceeded in feparating a peculiar fubftance from opium, which he denominated *morphia*. It is to this principle that opium owes its narcotic properties; and the *narcotic principle* of Derofne, according to Sertürner, is a compound of morphia, and a peculiar acid called the meconic, which opium contains. This latter circumftance, however, has been fince called in queftion by Robiquet.

According to Sertürner, morphia occurs in opium combined with meconic acid. There are different methods of feparating morphia from opium. Sertürner effected it by adding acetic acid, and thus forming an impure acetate of morphia. The acetic acid was then feparated by ammonia, and the morphia thus obtained purified by means of alcohol. Others, after feparating the extraneous matter as much as poffible, add at once to the watery folution of opium pure ammonia, to precipitate the morphia, which is to be purified as before.

Morphia thus obtained is cryftallized in the form of double four-fided pyramids, whofe bafes are fquares or rectangles, and fometimes of four-fided prifms with trapezoidal bafes. It diffolves in eighty-two times its weight of boiling water, and the folution on cooling depofits regular colourlefs tranfparent cryftals. It is foluble in thirty-fix times its weight of boiling alcohol, in forty-two times its weight of cold alcohol, and in eight times its weight of fulphuric ether. All thefe folutions change the infufion of Brafil wood to violet, and the tincture of rhubarb to brown, thus denoting diftinct alkaline properties. They have a bitter and peculiar aftringent tafte; and the faturated folutions, when rubbed upon the fkin, leave a red mark. It acts with great energy on the animal economy. Half a grain being fwallowed by a young man of feventeen, produced a flufhing in the face and an augmentation of the mufcular energy; another half grain being fwallowed half an hour afterwards, occafioned a dull pain in the head, giddinefs, ftupor, and naufea. A third half grain aggravated the fymptoms fo much, that Sertürner became alarmed, and made his patient fwallow a quantity of vinegar. But the fymptoms were rather aggravated and continued all night, though they were removed next morning by the ufe of magnefia.

Morphia readily combines with the different acids, neutralizes them, and thus forms falts, of the properties of which the following is a brief fummary. The *carbonate* of *morphia* cryftallizes in fhort prifms. The *acetate* of *morphia* cryftallizes, but is very foluble in water. The *fulphate* of *morphia* is likewife very foluble. The *muriate* of *morphia* affumes a plumofe appearance, and is much lefs foluble than any of the other falts of morphia. The *nitrate* of *morphia* cryftallizes in prifms.

Dr. Thomfon eftimates the weight of the atom of morphia, from the experiments of Choulant, at 82.5; but this probably differs confiderably from the truth.

Meconic Acid.—This acid may be obtained from the infufion after the morphia has been feparated by ammonia as above-mentioned, by adding muriate of barytes as long as any precipitate falls, which is *meconiate of barytes*. To obtain the meconic acid from this falt, M. Choulant triturated it in a mortar with its own weight of glaffy boracic acid. This mixture being put into a fmall glafs flafk expofed gradually to heat in a fand-bath, the *meconic acid* fublimed in the ftate of fine white fcales or plates.

Meconic acid thus obtained has a ftrong four tafte, which leaves behind it an impreffion of bitternefs. It is readily foluble in water, alcohol, and ether. It reddens the greater number of vegetable blues, and changes the folution of iron to a *cherry-red* colour; when thefe folutions are heated, the iron is precipitated in the ftate of protoxyd. This acid unites with the different bafes forming *meconiates*. The *meconiate of potafh* cryftallizes in four-fided tables, and is foluble in twice its weight of water. The *meconiate of foda* cryftallizes in foft prifms, and is foluble in five times its weight of water. It feems to effloresce. The *meconiate of ammonia* cryftallizes in ftar-form needles, which when fublimed lofe their water of cryftallization, and affume the form of fcales. The *meconiate of lime* cryftallizes in prifms, and is foluble in eight times its weight of water. Dr. Thomfon eftimates the weight of the atoms of this acid, from the experiments of Choulant, at 27.5; but this can only be confidered as an approximation.

Such is a brief account of the principles which chemifts have lately detected in opium, and which, from the importance of the fubject, we have thought proper to infert here.

ORANGE, l. 2, *r.* 25,247. Col. 2, l. 4, *r.* 1686; l. 7, *r.* 229; l. 11, *r.* 764; l. 13, *r.* 34,347; l. 14, *r.* 966; l. 22,—The number of inhabitants in 1810 was 2266, including 48 flaves; l. 27, *r.* 12,323 inhabitants, of whom 6516 were flaves in 1810.

ORANGEBURG, l. 6, *r.* 13,229—6564.

ORES, *Chemical Analyfis of*. See ANALYSIS.

ORFA, in *Geography*, the prefent name of the ancient *Edeffa* (which fee), from which the pachalic of Orfa derives its appellation. This pachalic is almoft entirely encircled by the windings of the Euphrates and the river Khabour, and occupies a confiderable portion of the moft barren part of Mefopotamia. In the early ages of the Roman empire, this divifion of Mefopotamia bore the name of Ofrhoene. It had fubfifted 843 years as an independent kingdom, when it was reduced under the form of a province by Caracalla, who led Abgarus, the laft of its kings, in chains to Rome. The city of this name, after the expulsion of the princes of Osrhoene, became a Roman colony, and was regarded as one of the bulwarks of Mesopotamia against the Parthians and Persians. It was the residence of the Courtneys, counts of Edessa; and fell, together with the adjoining territory, into the hands of Zingi and Salladeen. In the thirteenth century it was sacked by the Moguls, and by Timur in the 804th year of the Hegira. It is now subject to the grand seignior, and the residence of a pacha of two tails. It is situated in a barren country, 232 miles from Diarbekr, surrounded by a stone-wall, defended by a citadel, and a broad deep ditch. The houses are well built, and the inhabitants, composed of Turks, Arabs, Armenians, Jews, and Nestorians, amount to about 20,000 souls. The chief ornaments of the city are, a magnificent mosque, consecrated to Abraham, and the cathedral of the Armenians, now fallen to decay. On an adjoining mountain are the ruins of a building, called the palace of Nimrood, and several extraordinary subterraneous apartments, apparently very ancient. M'Kinneir's Persia.

ORFORD, l. 4, *r.* 1265.

ORGAN, col. 8, l. 12 from bottom, *r.* thoroughly repaired.

ORLAND. Add—It contains 480 inhabitants.

ORLANDO. See LASSUS.

ORLEANS, l. 4, *r.* 23; l. 10, *r.* 5830; l. *ult.* and in 1810 of 1248 persons.

ORLEANS, *New*, l. 3, insert 105 miles, &c.; l. 3, add—or, by the statement of Mr. Darby, N. lat. 28° 57′. W. long. 90° 8′. At the close, add—By the census of 1810, it is stated as comprising the following counties; *viz.* Orleans, German Coast, Acadia, La Fourche, Iberville, Point Coupee, Concordia, Ouachitta, Rapides, Nertchitoches, Opeloufas, and Arkansas, which include a number of parishes, and a population of 76,556 souls. The city and suburbs of New Orleans contained 17,242, and its precincts 7310: the number of slaves in the former is stated at 5961, in the latter at 4863. Since the census of 1810, there has been a rapid increase of population. Mr. Darby, in his "Description of Louisiana," published in 1816, states, that 1000 may be added for the annual increase, so that the present population may be estimated at more than 23,242 persons. No city perhaps on the globe, he says, presents a greater contrast of national manners, language, and complexion, than New Orleans. The proportion between the whites and men of mixed cast or black is nearly equal. Among the whites, the French are hitherto most numerous and wealthy; next to these are the Anglo-Americans; and lastly, the natives of the British islands. Here are but few Spaniards and Portuguese, some Indians, and dispersed individuals of all the nations of Europe. For a further account, see UNITED STATES.

ORNITHIDIUM, in *Botany*, from ορνις, *a bird*, and ειδος, *shape, or appearance*.—Salis. Tr. of Hort. Soc. v. 1. 293. Brown in Ait. Hort. Kew. v. 5. 210.—Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Ess. Ch. Lip sessile, hooded, united to the base of the column. Calyx and petals converging. Anther a moveable deciduous lid. Masses of pollen four, oblique, furrowed behind.

1. O. *coccineum*. Scarlet-flowered Ornithidium. Ait. n. 1. (Cymbidium coccineum; Swartz Act. Nov. Upf. v. 6. 70. Willd. Sp. Pl. v. 4. 94. Curt. Mag. t. 1437. Epidendrum coccineum; Linn. Sp. Pl. 1348. Jacq. Amer. 222. t. 135. Helleborine coccinea multiflora; Plum. Ic. 175. t. 180. f. 1.)—Native of the West Indies. Cultivated in a stove, among rotten bark, and flowering in June. The *leaves* are lanceolate, coriaceous, each proceeding from a bulb. *Flowers* scarlet, not large, each on a simple, axillary, scaly stalk, much shorter than the leaves.

ORONO. Add—The township in the district of Maine, and county of Hancock, has 351 inhabitants.

ORRERY, col. 28, l. 17, for taken from *r.* taken for. Col. 42, l. *ult.* for under *r.* over. Col. 44, l. 9, for lays *r.* lies.

OSAGES. Add—See WASASHA.

OSMAZOME, in *Chemistry*. See BLOOD and FLUIDS, *Animal*.

OSRINGTON, l. *ult.* *r.* 1341.

OSNABURG, a township of Ohio, in Stark county, having 301 inhabitants.

OSSIPEE, l. 2, *r.* Strafford; l. 4, *r.* 1205.

OSSIPEE *Gore*, a township of the same state and county, having 125 persons.

OTAHEITE, l. 6 from the end, add—From a survey made by captain Wilson in this voyage, he estimates the whole number as not exceeding 16,050 persons; and Turnbull, in his "Voyage round the World," performed from 1800 to 1804, says, that they cannot now be estimated at more than 5000.

OTALGIA, derived from ους, *the ear*, and αλγος, *pain*, signifies the disorder, which, in plain English, is generally called the *ear-ache*. The pain may be confined to one ear, or affect both these organs with different degrees of severity. It may be either of a burning, shooting, pricking, piercing, throbbing, or gnawing description; or it may consist of an unpleasant sensation of whispering in the ear, of a ringing of bells (see TINNITUS *Aurium*), a continual humming noise, &c.; the complaint in such instances usually depending upon irritation of the nerves of the organ.

According to the nature and situation of the disease, the pain may affect either the outer part of the ear, the meatus auditorius externus, the cheeks and temples, or the internal parts of the organ, the cavity of the tympanum, the labyrinth, and the auditory nerve itself. Otalgia is divided into several species, which are determined by the nature of their particular causes. Callisen mentions five varieties of the disorder; *viz.* the *otalgia inflammatoria*, *catarrhalis*, *purulenta*, *metastatica*, (a case which the modern doctrines in pathology hardly allow us to admit,) and the *otalgia a corporibus alienis intrusis*.

The *inflammatory* form of the complaint, when seated in the external parts, is indicated by the common symptoms of inflammation, as heat, swelling, and redness, extending over the lobe of the ear, and the adjoining part of the cheek, attended with a diminution in the diameter of the meatus auditorius, and a consequent dulness in the power of hearing. But when the inflammation is seated in the internal ear, it is accompanied with acute fever, excruciating pain in the deeper part of the organ, exquisite sensibility to the slightest noise, intolerance of sounds, restlessness, sometimes a great deal of delirium, convulsions, syncope, coldness of the extremities, and, according to the accounts of several respectable writers, the disease may even have a fatal termination.

The *otalgia catarrhalis* is preceded by the usual symptoms of a cold, which is very frequently the consequence of an exposure of the head to a current of wind, or of the feet to damp, at a period when they are much heated. This ear-ache is commonly characterised by much milder symptoms than other varieties of the complaint; the swelling of the parts about the ear is not considerable; the nose discharges a vast quantity of mucus; the patient is troubled with cough and tooth-ache; and not unfrequently an enlargement

enlargement of the neighbouring glands is conjoined with the catarrhal fwelling of the fauces.

The inflammatory otalgia fometimes terminates in the formation of an abfcefs, which may be fuperficial, being then fufficiently manifeft from the prefence of the ordinary fymptoms of a cutaneous collection of matter. In this cafe, the fever and pain abate as foon as the abfcefs is opened, or has fpontaneoufly burft, and the pus has been difcharged. In other examples, the matter forms more deeply in the cavity of the tympanum, and it either makes its way outward by ulceration of the membrana tympani, or, in a more favourable way, through the Euftachian tube. When the abfcefs occupies a ftill deeper fituation, that is to fay, when the matter collects in the labyrinth, a necrofis of the bones often follows, the abfcefs either difcharging itfelf into the cavity of the tympanum, or becoming diffufed under the pericranium.

The *otalgia cariofa* may originate from a caries, or rather a necrofis of the temporal bone, or, fympathetically, from a caries of one of the teeth. As the communicating branches of the facial nerve are affected, we fee why paralyfis of the mufcles of the face is a frequent concomitant of this fpecies of otalgia.

The *otalgia from extraneous fubftances in the ear*, as maffes of hardened cerumen, infects, the lodgment of any fmall body, like a pea, &c. may be fufpected from the account which the patient will give of his cafe; but it may be clearly afcertained by examining the ftate of the meatus auditorius in a ftrong light, and by the ufe of a probe. An obftruction or compreffion of the Euftachian tube may alfo become a caufe of otalgia, as Callifen afferts, by confining fluids in the tympanum.

From what has been ftated, it is obvious that although otalgia may indeed fometimes be an *idiopathic* diforder, it is moft commonly only *fymptomatic*, in which laft circumftance it neceffarily requires for its relief the fame means which are proper for the cure of the primary difeafe, of which it is merely the effect.

In otalgia, the prognofis generally differs according to the feat of the difeafe, its nature and violence, and the eafe or difficulty of removing the caufe. The following circumftances relative to the prognofis feem to deferve remark.

Young perfons ufually fuffer much more feverely from ear-ache than older fubjects, and experience more ferious degrees of indifpofition from the complaint. The internal inflammatory otalgia which produces fuppuration affects the trunk of the auditory nerve itfelf, and difcharges its matter within the cranium, may deftroy the patient in a few days, if we are to credit the obfervations of Callifen. A fubfidence of the inflammation, as indicated by a remiffion of the fever and pain, and a fpeedy evacuation of the matter by the rupture of the abfcefs, are events which augur a favourable termination of the diforder. When fuppuration has occurred in the cavity of the ear, and the abfcefs uncomplicated with any carious affection has burft and difcharged itfelf through the meatus auditorius externus, the diforder may prove no more dangerous than any other fimple abfcefs. For the moft part, after every fevere attack of otalgia a degree of deafnefs remains, and this happens with ftill greater certainty when the cafe has been attended with fuppuration.

The treatment of the various forms of ear-ache muft of courfe depend upon the nature of the caufes of the diforder. In general, however, if inflammation exift in the organ, it is to be oppofed by the active employment of antiphlogiftic remedies, efpecially topical bleeding with leeches, venefection, gentle purgatives, and anodyne fomentations. When matter is collected, the burfting of the abfcefs fhould be accelerated with emollient applications, or an opening fhould be made with a lancet. In fuch circumftances, the ear fhould be frequently cleanfed by means of injections, which, generally fpeaking, ought to be of a fimple unirritating kind. Foreign bodies muft be extracted. A morbid fenfibility in the nerves of the ear muft be leffened by fuitable internal and external remedies, the ufe of opium, anodyne fomentations, the exhibition of conium or ftramonium, the introduction of a doffil of foft cotton into the meatus auditorius, dipt in a mixture of olive-oil and laudanum, or the tinctura camphoræ, a perpetual blifter in the vicinity of the ear, &c.

OTIS, in *Geography*, a town of Berkfhire county, in Maffachufetts, containing 1111 inhabitants.

OTSEGO, l. 6, *r.* 38,802 inhabitants, of whom 74 are flaves.

OUACHITTA, a county and parifh of the territory of Orleans, which, in 1810, contained 1077 inhabitants. The ftaples of this territory are, cotton, tobacco, lumber, and peltries. Ouachitta river is not navigable in autumn, when the waters are low, for any veffels above the fize of canoes.

OVERTON. Add—Alfo, a county of Weft Tenneffee, containing 5643 inhabitants, of whom 355 are flaves.

OUGEIN, col. 6, l. 39, for here *r.* yet.

OUNDLE. In 1811, the parifh of Oundle contained 362 houfes, and 1833 perfons; 821 males, and 1012 females: 62 families being employed in agriculture, and 302 in trade, manufactures, and handicraft.

OWHYHEE, col. 2, l. 18. Its height is eftimated at no lefs than 18,400 feet.

OXALIC Acid, in *Chemiftry*. The laft analyfis of this acid is by Berzelius. According to him, it is compofed of

Hydrogen - - -	.244
Carbon - - - -	33.222
Oxygen - - - -	66.534
	100

which nearly correfpond with $\frac{1}{12}$th atom hydrogen + 2 atoms carbon + 3 atoms oxygen. But there are fome doubts if even this determination be correct.

OXFORD, in America, l. 3, *r.* 1277; l. 5, *r.* 1453. Col. 2, l. 5, *r.* 1810, 2470 inhabitants, including 36 flaves; l. 6, *r.* 973; l. 15, *r.* 700 inhabitants; and another, called Lower Oxford, with 769 inhabitants.—Alfo, a townfhip of Ohio, in Guernfey county, having 440 perfons.—Alfo, a townfhip of Ohio, in Tufcarawa county, having 271 inhabitants.

OXYGEN Gas, in *Chemiftry*. According to the moft recent determinations, the fpecific gravity of this gas is 1.111; and 100 cubic inches of it, at a mean temperature and preffure, will weigh 33.888 grains. See Atomic *Theory*.

OXYGENIZED Acids. M. Thenard has recently been enabled to combine oxygen with acids almoft to an unlimited extent, chiefly by means of the peroxyd of barium. His general method was, to diffolve the peroxyd in the acid intended to be oxygenized, and afterwards to feparate the barytes by means of fulphuric acid; the oxygen was thus transferred from the peroxyd of barium to the acid, and by repeating the operation he found that additional dofes could be added. In this way, he oxygenized the nitric, muriatic, phofphoric, and other acids, and by taking advantage of its other properties, the muriatic acid in particular was oxygenized, even fo far as to contain 64 atoms of of oxygen to 1 of muriatic acid. Thefe oxygenized acids combine with the different bafes, and neutralize them; but they are by no means permanent, readily giving off their fuperfluous oxygen upon the application of heat, &c. The oxygenized muriatic acid alfo is decompofed by the oxyd of filver, chloride of filver is formed, and the oxygen is fet at liberty.

By fimilar methods, M. Thenard has been able to combine additional dofes of oxygen with many of the metallic oxyds. See Annales de Chimie et Phyfique, vols. viii. and ix.

OXYMURIATIC Acid. See Chlorine.

OXYPRUSSIC Acid. See Cyanogen and Prussic *Acid.*

P.

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PACKERSFIELD, l. 3, *r.* 1076.

PACOLET. Add—Alfo, a town of Rutland county, in Vermont, containing 2233 inhabitants.

PADMA, l. 2, *dele* of.

PAINT, in *Geography*, a townfhip of Fayette county, in Ohio, having 534 perfons.—Alfo, a townfhip of Highland county, in Ohio, with 775 inhabitants.

PAINTING *in Enamel.* Of all the various mediums of painting none is fo durable as enamel, fince time, which deftroys all other things, alters neither its beauty nor its brilliancy; and that this great advantage may not be too eafily attained, it may be faid, alfo, that no other method of painting unites in itfelf fo many difficulties in the execution.

Enamel painting differs from every other kind of painting, in employing, as a vehicle for the colours, glafs or fome vitreous body, to hold the parts together, and fix them to the ground on which they are laid. This being mixed with the colours, and fufed or melted by means of heat, becomes fluid; and having incorporated with the colours, forms together with them a hard fhining mafs. This vitreous body, called flux, is to an enamel picture what oil, gum, or varnifh, is in the other modes of painting, as by its means the work acquires its full degree of brilliancy and depth. See Flux.

The quality of the flux is an object of the greateft confideration to the enamel painter; when it is eafily fufible, it is called foft; and when it requires a greater degree of heat, it is called hard: thefe terms are applied as well to the enamel grounds, and the other vitreous fubftances employed, as to the fluxes. It is effential that the fluxes compounded with the different colours fhould be of the fame degree of hardnefs, or nearly fo; as otherwife fome, from being too foft, would be deftroyed by the fire; while others, from having the contrary defect, would not be fixed to the plate, nor acquire their proper colour. It is neceffary too, that the plate or enamel ground on which the picture is painted fhould be harder than the colours; for if they both melted with the fame degree of heat, they would neceffarily run together, and render the work indiftinct.

The ground-work of the enamel plate is metal. Gold and copper are thofe chiefly employed. For fmall plates, where great neatnefs and delicacy are neceffary, gold is preferable, on account of its not bliftering round the edges in the fire, as is the cafe with copper: for large plates, copper is preferred, not only on account of the difference of expence between it and gold, but becaufe it is found from experience to be better: gold being a much fofter metal than copper, the plate, if of any fize, is not found to retain its original form, in paffing through the fire, fo well, when made of it, as when it has copper for its bafis. The form of the enamel plate is flightly convex; if it were made quite flat, in paffing through the fire repeatedly it would become concave. It is on this account that gold is not proper for large plates, being heavier as well as fofter than copper: its own weight added to that of the enamel would naturally tend, while in a ftate of fufion, to fink them in the middle, and render the furface warped and uneven, unlefs they experienced refiftance from the back, which would moft probably occafion the deftruction of the whole.

When platina was firft difcovered, it was imagined, from its great difficulty of fufion, that it would be of effential fervice in the making of enamel plates, but it was found to be ufelefs for that purpofe: as, although a plate made of it paffed through the fire with its form unaltered in the flighteft degree, there was found wanting that union between the enamel and the metal on which it is laid, that is fo neceffary to enfure its fafety, fince a flight fhock was fufficient to feparate them and leave the platina quite free from the enamel. With gold and copper it is quite different, it is hardly poffible to free the gold entirely from the enamel, and fo ftrict is its adhefion to the copper, that if broken it invariably brings a lamen of the copper with it. The mode of preparing the enamel plate for painting is exactly fimilar to that for watch and clock dialling (fee Enamelling), with this exception, that over the enamel is paffed a fofter body, a flux for the purpofe of incorporating with the colours laid on: this flux fhould agree with every colour ufed.

The colours ufed in enamel painting are all prepared from metals, earths, or other mineral bodies, mixed and melted with certain proportions of flux, which, when fufed, difcover the colours, and fix them to the plate. The colours of the enamel painter are few, and his palette, when compared to that of other artifts, of the moft difcouraging defcription, many of them appearing very different before and after paffing the fire. This is indeed one of his greateft difficulties, and one which requires the greateft practice to overcome.

overcome. It is true he may leffen it by having by his fide a plate on which he has made trial of his colours, and by which he has afcertained their pofitive colour, and what their various combinations can produce; but it is alfo neceffary that he fhould have in his mind's eye the effect which the fire will give, and calculate the depth and brilliancy of his work; without this, he will be ever in danger of ufing one tint for another, and continually fubject himfelf to difappointment.

It is of the greateft importance that the colours fhould all agree. This will entirely depend on the properties of the fluxes made ufe of. It would be very defirable that all the colours fhould be fluxed with the fame materials; but as this cannot be, care fhould be taken that they are not of difcordant principles. This difagreement manifefts itfelf by fome of the colours deftroying the others when mixed, or by occafioning a bubbling of the tint in the fire, and a roughnefs on the furface when cold.

Some writers on the fubject have confidered it neceffary, that to paint in enamel two fets of colours fhould be made ufe of; one hard, for the beginning of the picture; the other foft, for the latter paintings. This idea could only have originated with a perfon totally unacquainted with the principles of the art, as if it were not more neceffary to have the full power of the colours at the finifhing than at the beginning of the work: the foftnefs or hardnefs of the colour depending on the greater or lefs degree of flux mixed with it, it is evident that in proportion to the quantity of glaffy matter mixed, fo will the ftrength of the colour be diminifhed. It is much better to continue the old mode of ufing the fame colours from firft to laft, more freely and in greater body in the beginning, and more thinly towards the finifh.

It has been faid, that the French painters in enamel have difcovered the mode of making the colours appear the fame before as after paffing the fire. If this were really the cafe, the advantage is not fo great as at firft fight it feems to be. The difadvantage is not fo much the different appearance of the colour, as the want of its proper depth. This is not to be overcome but by the admiffion of a greater evil. To bear a colour out, an oil muft be ufed, which will not evaporate, and the confequence of this would be, that on its application to the fire corrofion would take place, and the picture muft undergo an operation which would much reduce its power before it would be fit for again proceeding with. It is towards the finifh of the picture that the enamel painter's greateft difficulties begin; for fuch is the nature of his colours, that the parts he touches, when it is not neceffary to cover the whole, whether he heightens the lights or deepens the fhades, appear the fame, and much lighter than the general tint. This is an operation which renders great practice and great caution equally neceffary.

The principal colours whofe tints are moft altered by the fire are the reds, and as they are effential in the painting of the flefh, their alteration neceffarily affects the whole; as the fame colour which after fire becomes a bright carmine, is before that operation of a dirty-brownifh hue: this inconvenience may be leffened by expofing the colour to a flight heat, by which it will acquire fomewhat of its right tint. Some painters for this purpofe have mixed a portion of carmine, or fome other colour which is deftroyed by fire, with their rofe-colours or reds, to render them when painted with the fame in appearance as after they are fired: this, to fay the leaft of it, is a very fallacious mode of proceeding, and one which an artift's practice would foon teach him to defpife.

The colours ufed in enamel are few and fimple, and from them the different tints fhould be made by the artift himfelf, (and not by the colour-maker, as ufed to be the cafe,) in the fame manner as in any other way of painting. They are, white, yellows, rofe-colours or reds, browns, blues, and blacks. The white is prepared from tin; the yellows from filver, antimony, and from fome ochres; the rofe-colours from gold; the blues from cobalt; and the browns and blacks from iron. A red may be prepared from iron, and a green from copper, but thefe will not agree with the other colours. A green cobalt has been lately found in fome parts of Germany, from which a green may be made, as alfo one from the chrome; but neither is found to be in any refpect better than that which may be made from blue and yellow, and it is therefore unneceffary to encumber the palette with them. No colour fhould be admitted till, from repeated experiment, it has been found to agree with every other in every poffible combination.

The oils employed are effential, and they are fuch as on application to the fire evaporate with a flight degree of heat; for this purpofe, the oil of fpike lavender is the beft. The oil of amber is ufed to keep the colours moift for the day's ufe, as it does not evaporate before expofure to heat. A thick oil of turpentine is likewife ufed for the purpofe of binding the colours together, and making them work more pleafantly; this however muft be done with the greateft caution, as if ufed too freely it will not efcape in the fire, and will occafion corrofion.

The laft procefs which the enamel picture undergoes is that of paffing the fire: this is done after every painting, and is very often neceffary; as without it the artift cannot tell the real ftate of his work. The fire for this purpofe is of the fame utility to the enamel painter, as a proof of his plate is to the engraver: it fhews him what he has accomplifhed, and points out to him what remains to be done. The laft time of paffing through the fire is, as may naturally be fuppofed, a moment of great anxiety to the artift, as he may, in an inftant, witnefs the deftruction of his picture, and fee the labour of months rendered unavailing, by the enamel ground opening and fhewing a crack acrofs his work. This accident may fometimes be repaired, but never without great labour. The mode of firing the picture is exactly fimilar to that ufed in the making of the clock plates. See Enamelling.

The hiftory of enamel painting is involved in the greateft obfcurity; of its antiquity we have ample teftimony in the account which Diodorus Siculus gives of the painted walls executed by the command of Semiramis, in her city of Babylon. At this time, enamel painting had attained the higheft eminence to which any art can afpire; when it was made the engine of policy, and the inftrument of religion; when it was employed to commemorate the heroic deeds of the living, and celebrate the virtues of the dead. How long it retained this elevation we know not, but it is probable it was efteemed while Babylon remained, and, like that majeftic city, was overwhelmed with fuch entire ruin, as fcarcely to leave a wreck behind.

The coloured beads which envelope the mummies, and the painted idols of the Egyptians, prove that this art was not unknown to that extraordinary people; although nothing which exactly deferves the name of painting has defcended to us.

To the Greeks it was known, as is evident from their painted vafes, which although generally executed in one or two colours, yet furnifh fome inftances in which, departing from this fimplicity, they have difplayed a variety of colours with great fuccefs.

 To

By the Romans, if this art were not unknown to them, which, confidering their intimate knowledge of the acquirements of the Greeks, is not probable, it was at leaft unpractifed: fculpture with them feems to have fuperfeded painting in the decoration of their vafes, the embellifhing of their farcophagi, and for all ornamental purpofes.

Some ornaments which have reached our time indicate that the Saxons were not unacquainted with the art of enamel; and in the tomb of Edward the Confeffor are many fpecimens of coloured glafs. Other monuments of a fubfequent period prove, that the art regularly defcended, although with varied fuccefs, at different intervals; but in the tomb of Edward III. John of Eltham, and fome others of that period in Weftminfter abbey, are ftriking inftances of the art of enamelling. On the monument of the king, the coats of arms are enamelled in their proper colours on thick plates of copper; and the armour of the warrior is curioufly ornamented with an enamelled pattern of blue, white, and gold.

Thefe remarks may be faid more properly to relate to the practice of enamelling than to the art of enamel painting, and are only mentioned here to prove that it was never entirely loft fight of; although it was long after that it became enamel painting, as that term is now underftood.

In the fixteenth century, ornamental works of confiderable dimenfions were executed: every one converfant with the arts muft be acquainted with the painted difhes called Raffaelle ware, copied from the defigns of that immortal painter and his difciple Julio Romano: thefe are, ftrictly fpeaking, legitimate enamel pictures, executed on a ground prepared as it is at prefent, and differing only in the fhape. They are generally painted in two colours.

Enamel painting feems long to have remained in this ftate, and there are but few examples where a variety of colours was ufed until the time of Petitot, who died in the latter end of the feventeenth century. He is the firft painter in enamel of whom any particular mention is made: he was in this country in the reign of Charles I. His pictures are of a fmall fize, not exceeding two or three inches; they are very highly and beautifully finifhed, but certainly not deferving the diftinguifhing commendation beftowed on them by Pilkington; who fays, that if they were magnified to the fize of life, the pictures of Vandyck would fuffer by the comparifon. His beft pictures were copied from that mafter, and are of a fmall fize: his portrait of lady Southampton, a whole length after Vandyck, in the duke of Devonfhire's collection, the largeft picture he ever painted, is certainly not among his beft. His works have too much that particoloured appearance, for which enamel painting has by perfons of true tafte been fo juftly cenfured. The reputation of Petitot was no doubt owing to the novelty of his purfuit, as he has fince been much furpaffed. His fon practifed the fame act when his father quitted this country, and his pictures are now generally taken for thofe of his father.

No farther mention is made of enamel painting until the reign of queen Anne, when Boit, who poffeffed very little ability, appeared: he did not practife long in this country. He had the honour, however, of inftructing Zincke, who far furpaffed not only his mafter but Petitot. Although his pictures are not fo highly finifhed, his beft works have lefs of that parti-coloured effect, and confequently more the appearance of nature, than thofe of his great predeceffor. Petitot's beft works were copied from Vandyck, thofe of Zincke from Kneller. Meyer, who chiefly painted in water-colours, commenced enamel painting on the decline of Zincke; as he applied but little to this branch of art, he could not be expected greatly to excel: his principal work, the portrait of the marquis of Granby, in the king's collection, though poffeffed of confiderable ability and fweetnefs in the execution, has too many of the defects of early enamels, and by no means conveys an idea of the ftyle of the great original from whom it is copied, fir Jofhua Reynolds. The beft pictures of Meyer are inferior to thofe of Zincke. Spencer's pictures, as far as they go, are very beautiful both in colour and execution; but he, as well as all other enamel painters, confined his efforts to a very fmall fcale, and either did not wifh or thought it impoffible to obtain depth and richnefs; his pictures, therefore, are little more than beginnings. The other profeffors of this art, of this period, were Hone, who afterwards became a portrait-painter in oil, Spicer, Burch, and Craft. Craft is only mentioned here to caution future enamel painters againft an error into which he fell,—of painting on an enamel ground without the addition of a flux. The flux being fofter than the enamel incorporates more readily with the colours, and gives that melting foftnefs to the tints fo peculiar to enamel painting. By omitting this, he deprived himfelf of one of his greateft advantages; and the confequence is, that inftead of great delicacy and finifhing, his pictures appear hard, crude, and inharmonious.

Stubbs, an animal painter in oil, a comparative anatomift, and eminent as either, was alfo a painter in enamel. Unfortunately he took up this branch of art on too confined a principle, confidering rather its durability than that excellence which alone can render durability truly eftimable. His pictures are painted on plates made of Wedgwood's ware, and he prided himfelf on being the maker of his colours, which are, however, of the moft ordinary kind. Now, although it is defirable that the artift fhould know how to make his own colours, it is equally certain, that if he can get them made for him, it is much better to do fo than to employ his own time in preparing the means, when it fhould be directed to the accomplifhment of the end. Neither the material on which he worked, nor the colours with which he painted, were calculated to bear more than two or three fires, confequently great perfection could not be expected; and although they might tolerably well anfwer his purpofe for the painting of animals, it is certain that his pictures in oil are in every refpect fuperior to thofe he executed in enamel.

We have now brought enamel painting down to our own time, when fuch great improvements have been made by the exertions of a living artift, Bone, as to render it an era in the art; that he is living, muft be our apology for not entering into a full difcuffion of his merits: but it muft be faid, that by his endeavours, aided by the liberal encouragement of that true lover and magnificent patron of the arts of his country, the Prince Regent, from a mere mechanical labour, enamel painting has become a highly ufeful branch of a liberal art; no longer confined to things merely ornamental, no longer differing from every other mode of painting, as much in its effect as procefs, it now affumes the appearance of highly-finifhed oil-painting, with the advantage of perpetual durability. As enamel painting from its nature muft be always copied, the ftyle of the original fhould be fo fcrupuloufly obferved, as to convey an inftantaneous recollection of the painter. In this refpect, the works of Bone are pre-eminent; whether the feverity of Leonardo, the purity of Raffaelle, the glow of Titian, or the fplendour of Rubens, is entrufted to his pencil, each is alike fuccefsfully pourtrayed. To the admirers of that ornament of our country and of the arts, Reynolds, this muft appear in its full force; and it muft afford them great pleasure to find, that such close imperishable copies of the rare and justly valued pictures of this great master can thus be transmitted to posterity.

Of the advantages of enamel painting, it would be superfluous to speak, they are so obvious as to occur to the most superficial observer. Its unalterable durability is alone sufficient to counterbalance every disadvantage to which it is subject: to paint for eternity is the peculiar province of the enamel painter. To him the hyperbolical compliment which Pope paid to Jarvis is justly due:

> "Beauty, frail flow'r, which every season fears,
> Blooms in his colours for a thousand years."

How often have we mingled pity with our admiration of the fine works of the great masters, colourists in particular, when we have observed the dreadful ravages of time on their pictures. By enamel painting this disadvantage is removed; by means of this art, posterity will become acquainted with the real merits of their predecessors; and those works which must of necessity decay, will be preserved in all their original splendour. How invaluable at present would the portraits of the illustrious characters of Greece and Rome appear! Had enamel painting then been known as it is practised at present, we should not now have to seek their imperfect resemblances in busts and gems.

Thus has this art, sometimes shining forth in full splendour, sometimes nearly merged in obscurity, survived the lapse of ages, and descended to the nineteenth century, whose enlightened policy and liberal patronage will never allow it to be again disregarded; but will employ the talents of the enamel painter in the way which they can be best employed, by preserving for futurity the portraits of our illustrious ancestors, whose deeds have conferred an honour on their country; and in handing down to posterity the resemblances of our great cotemporaries, and in perpetuating the best efforts of native genius. See ENAMELLING.

PAINTING *of Clocks and Watches*. See the preceding article, and ENAMELLING.

PAISLEY, col. 4, l. 21, for salvtie *r.* salvation.

PALAVER, an African term denoting a court of justice, or a public meeting of any kind.

PALERMO, in *Geography*, a town of America, in Maine, and county of Lincoln, having 761 inhabitants.

PALLADIUM, in *Chemistry*. According to the recent determinations of Dr. Thomson, the weight of the atom of this metal is 70, oxygen being 10; though this, perhaps, is not to be depended on, but as an approximation.

PALLADIUM. See MINERALOGY, *Addenda*.

PALMA, GIACOPO, in *Biography*, called the *Younger*, to distinguish him from his great uncle, has been styled by Lanzi, "the last painter of the good and the first of the bad epochs of the art of Venice." He was born in 1544, the son of Antonio Palma, an obscure painter, who first taught him the little he knew, and encouraged him to study the works of others, particularly those of Tintoretto and Titian. At the age of fifteen, he obtained the patronage of the duke of Urbino, who sent him to Rome, and maintained him there for eight years, during which time he employed himself in copying the works of M. Angelo, of Raphael, and above all, of Polidoro, and was employed by the pope to adorn one of the rooms of the Vatican.

On his return to Venice he found but little employment, Tintoretto and Paolo Veronese occupying the places of renown, and being engaged in all the public works. Their disagreement with a celebrated architect and sculptor, named Vittoria, furnished Palma with a patron, who endeavouring to lower the esteem of his enemies, used his utmost efforts to establish the rival painter, assisted him with his advice, and found him employment. Their united endeavours failed however of success, and Palma was obliged to be contented to hold the third rank in the art till their deaths left him without a rival. He had, in the mean time, painted in competition with them both, and produced very excellent works.

When he was left alone and was much employed, he relaxed from the care and diligence he had formerly used, and his works became slight in execution, so much so that Cesare d'Arpino, remarking upon the slightness of the style in which he painted, observed, that he meant to make some stay at Venice, to learn of him to make such admirable sketches. When price and time, however, were left to his own discretion, in which he did not abound, he produced some works worthy of his former fame; such as the altar-piece at the church of S. Cosmo and Damiano; the celebrated naval battle of Francesco Bembo, in the public palace; the Saint Apollonia at Cremona, &c. The compositions of the younger Palma are more distinguishable for their copiousness than the judgment with which they are conducted, and his design is more bold than correct. His colouring is more vivid than true, but is deservedly admired for its richness, suavity, and freshness.

PALMER, in *Geography*, l. 4, *r.* 1114.

PALMYRA, a township of Maine, in the county of Somerset, having 117 inhabitants.—Also, a township of Wayne county, in Pennsylvania, having 336 inhabitants.—Also, a township of Knox county, in the Indiana territory.

PALOMINO Y VELASCO, DON ANTONIO, in *Biography*, a Spanish painter, born in Valencia, in 1653. He studied at Cordova in grammar, philosophy, theology, and jurisprudence: the elements of his art he acquired of Don Juan de Valdes Seal, and to acquaint himself with the styles of the different schools, he went to Madrid in 1678. Here he painted the gallery del Cierzo, and pleased the king and the minister, and in 1688 he was made painter to the king. He was overwhelmed with commissions, for many of which he made only the designs; but whatever was begun and terminated by himself in fresco, or in oil, possesses invention, design, and colour, in the essential, and taste and science in the ornamental parts. His style was certainly more adapted to the demands of the epoch in which he lived, than to those of the preceding one, and probably would not have obtained from Murillio the praises lavished on it by Lucca Jordano.

Palomino may be considered as the Vasari of Spain, as copious, as credulous, and as negligent of dates, too garrulous for energy, and too indefinite for the delineation of character, but eminently useful with the emendations of modern and more accurate biographers.

His literary work is divided into three parts, theoretical, practical, and biographical. The two first bear one title, *viz.* "El museo Pictorico y escala optica." The third part, distinguished by that of "El Parnasso Espanol Pintoresco laureada, &c." Madrid, 1724, though perhaps only intended as an appendix to the two former, is by far the most important and interesting.

PALOU, or PALO, l. *ult.* add—pachalic of Erzeroom, situated on the edge of a mountain and the banks of the Euphrates: the population amounts to about 8000 souls, Turks, Armenians, and Kurds: the river here is very rapid, and from the bad construction of the bridges made of wood, whole caravans have been swept away after the melting of the snow. The district of Palo is four days' journey in length and two in breadth.

PANDEANS, a title given to itinerant companies of Italian muſicians, who perform on the Syrinx or Pan's pipes of different pitches with their mouths, and accompany themſelves on different inſtruments with their hands and feet.

The loweſt ſet of reeds (the *ſeptem diſcrimina vocum* of Virgil) is called the contra baſſo, or double-baſe; the next fagotto, or baſſoon; the third, ſeptenary, is the tenor or ſecond treble; and the fourth, or higheſt range of pipes, the firſt treble: ſo that in the aggregate there is a complete ſcale of four octaves, and they never play in leſs than three or four parts. The inſtruments with which they accompany themſelves with their hands are the cymbals, the triangles, the double drum beat at both ends, the mezza luna, a Turkiſh inſtrument, and the tambour de baſque.

The reeds or pipes are faſtened under the chin of the performer, and the lip of the player runs from one to the other with ſeeming facility, without moving the inſtrument by manual aſſiſtance. (*Et ſupra calamos unco percurrere labro*, Lucretius.) The muſic which theſe people perform is very gay and pleaſing. One of the company with whom we converſed told us that they were Milaneſe peaſants and villagers, not allowed to ſtroll into great cities: which accounts for our never having heard them in their own country, nor any of our friends who have made the tour of Italy, and remained there ſome years.

The uſe which theſe ingenious people have made of Pan's pipes, by playing in troops and in different parts, is beating the ancients at their own weapons.' The Grecian ſhepherds of Theocritus, and the Roman of Virgil, contend in dialogue, but never perform in parts.

It will be obſerved, that ſome of the performers, particularly the firſt treble, have more than ſeven pipes, which enables them to extend the melody beyond the ſeptenary.

PANIS. Add—See Towiaches.

PANTING, in *Phyſiology*. See Lungs.

PANTON. Add—containing 520 inhabitants.

PAPER Currency, l. 8 from the end, *dele* where; l. 5, inſert—not.

PAR *of Exchange*, col. 2, l. 24, for loſs *r.* leſs.

PARADISE, l. 2, *r.* 1548.

PARASANG. Add—The farſang at a mean was little ſhort of $3\frac{1}{2}$ Britiſh miles. The paraſanga of Xenophon was no more than 3 Roman miles, or 2.78 Britiſh miles. Herodotus and Xenophon ſay, that the paraſanga conſiſted of 30 ſtadia; and as theſe may be ſuppoſed to have been of the Grecian itinerary ſtandard, the paraſanga would be equal to 2.9 Britiſh miles, or $\frac{1}{24}$th only longer than that of the Anabaſis. Rennell's Illuſtration of the Expedition of Cyrus.

PARHELIUM, col. 2, *figs.* 23, 24; l. 14, *r.* 1320.

PARIS, in America, l. 13, *r.* Oxford for Cumberland.

PARIYATEKA, l. 12, for This *r.* There.

PARK, Mungo, in *Biography*, a celebrated traveller, was the ſon of a farmer on the banks of the Yarrow, near the town of Selkirk, in Scotland, and born on the 10th of September 1771. After having received the firſt rudiments of education in his father's family, he was removed to a grammar-ſchool at Selkirk, where he remained for a conſiderable number of years, and where he was diſtinguiſhed by his application and improvement. At this early period, though he was ſedate, ſtudious, and thoughtful, he manifeſted traces of that ardent and adventurous diſpoſition which formed his diſtinguiſhing character in future life. Preferring the medical to the eccleſiaſtical profeſſion, for which he was originally deſigned, he was bound apprentice, at the age of 15, to Mr. Anderſon, a reſpectable ſurgeon at Selkirk; and after reſiding with him for three years, he removed in 1789 to Edinburgh, where he attended the uſual medical lectures during three ſucceſſive ſeſſions. In this ſituation he diſtinguiſhed himſelf among his fellow-ſtudents, by ardour and aſſiduity in the proſecution of his ſtudies, and by particular attention, during his ſummer vacations, to botanical purſuits, in which he was aſſiſted by his brother-in-law Mr. James Dickſon. Upon his removal to London, this eminent botaniſt introduced him to ſir Joſeph Banks, by whoſe recommendation he was appointed aſſiſtant-ſurgeon to the Worceſter Eaſt Indiaman. In 1792 he ſailed for Bencoolen, and having availed himſelf of the opportunities for ſcientific reſearches, which this voyage afforded him, the reſult of his inquiries and obſervations was communicated, after his return, to the Linnæan ſociety, and publiſhed in the third volume of their Tranſactions. Some years prior to this period, a ſociety had been formed with a view of promoting diſcoveries in the interior parts of Africa, of which we have already given a brief account under the article African *Aſſociation*; and ſeveral perſons had been employed in accompliſhing the laudable purpoſes for which this ſociety was eſtabliſhed. Among theſe, we may reckon Meſſrs. Ledyard and Lucas, major Houghton, and Mr. Hornemann, who fell ſacrifices either to the ſeverity of the climate, the fatigue of the ſervice, or the violence of the natives. The Society, though diſpoſed to afford liberal encouragement to any perſon who was qualified for this undertaking, and who had at the ſame time reſolution ſufficient to engage in it, with the proſpects which paſt experience preſented to view, found themſelves at a loſs for a perſon in every reſpect fit for this hazardous miſſion. At this intereſting period Mr. Park returned from India, and no perſon could have been found better qualified for ſuch an adventurous office. Sir Joſeph Banks, the diſtinguiſhed patron of genius and ſcience, had been his friend, and with him Mr. Park was in habits of frequent and intimate intercourſe. Thus circumſtanced he offered his ſervices, and they were accepted. Having received his final inſtructions from the Society, he ſet ſail from Portſmouth on the 22d of May 1795, and on the 21ſt of June landed at Jillifree, a ſmall town near the mouth of the river Gambia, whence he proceeded to Piſania, where he was hoſpitably received by Dr. Laidley, to whom he had letters of recommendation. For an account of his progreſs, ſee the articles Africa and African *Aſſociation*. Upon his return, he was received with cordial congratulation, both by his friends and the gentlemen of the African Aſſociation; and he was allowed to publiſh an account of his travels for his own benefit. In the mean while, Mr. Bryan Edwards, ſecretary of the Aſſociation, printed and diſtributed among the ſubſcribers an abſtract of the Travels from Mr. Park's papers. To this abſtract was annexed an important Memoir by major Rennell, conſiſting of geographical illuſtrations of Park's journey; and this, by Mr. R.'s permiſſion, formed a valuable appendage to the fourth edition of the Travels. In the ſpring of 1798, government having it in contemplation to obtain a complete ſurvey of New Holland, applied to Mr. Park for this purpoſe; but the propoſed plan was never executed. The remainder of this year was ſpent by Mr. Park in viſiting his friends in Scotland, and arranging the materials of his Travels. Towards the cloſe of this year he returned to London, and devoted the principal part of his time to the correction of his MSS., which he committed to the preſs in the ſpring of the year 1799. The work, as ſoon as it was publiſhed, commanded an extenſive and rapid ſale, both on account of the intereſting information which it contained, and the general elegance of its compoſition. An abſtract of Mr. Park's diſcoveries, with

with regard to the eafterly courfe and magnitude of the Niger, the large and populous towns and villages that occupy the interior parts of Africa, the difcriminating character of the negroes, contrafted againft that of the Moors, and the civilization of the inhabitants of the interior, beyond the influence of the flave-trade, compared with that of thofe who are fituated near the coaft, and a variety of other particulars relating to the foil and productions of the country, and the manners and habits of its inhabitants, has been already given under the articles Africa, Morocco, Niger, &c. fo that we need not here enlarge. The curiofity of the public was amply gratified, and the name and work of Mr. Park became fingularly popular, though neither the one nor the other altogether efcaped cenfure. The flave-trade was at this time a fubject of general reprobation, and attempts were repeatedly renewed for the abolition of it. It was, therefore, natural to imagine, that in a work of this kind, the author would have availed himfelf of the opportunities which his narrative afforded him, of expreffing his decided difapprobation of this nefarious fpecies of commerce: more efpecially as it was well known to many of Mr. Park's intimate and confidential friends, that in converfation he had frequently declared his abhorrence of flavery and the flave-trade. Nor was it fufficient to allege, as fome of his advocates have done, that he confidered the abolition of the flave-trade as a meafure of ftate policy; and that it would be improper for him to give an opinion on a fubject which was at this time under the deliberation of the legiflature. This neutrality on his part, to fay the leaft of it, led perfons, who did not know his real fentiments, to reckon him among thofe who were hoftile to the abolition; and his authority was triumphantly appealed to by the advocates of the flave-trade. Whilft he feems to have ftudioufly avoided giving an opinion on the pernicious influence of this trade, he ftates facts which have been cited and ftrongly urged in favour of its abolition. In order to account for this kind of inconfiftency without impeaching his integrity, we fhould recollect how he was circumftanced whilft he was preparing and publifhing his narrative. "He was then," fays a candid biographer, "a young man, inexperienced in literary compofition, and in a great meafure dependent, as to the profpects of his future life, upon the fuccefs of his intended publication. His friend and adviser, Mr. Bryan Edwards," (a Weft India planter, and a fyftematic advocate of the flave-trade in the Houfe of Commons,) "was a man of letters and of the world, who held a diftinguifhed place in fociety, and was befides a leading member of the African Affociation, to which Park owed every thing, and with which his fate and fortunes were ftill intimately connected. It is difficult to eftimate the degree of authority which a perfon poffeffing thefe advantages, and of a ftrong and decifive character, muft neceffarily have had over the mind of a young man, in the fituation which has now been defcribed. Suggeftions coming from fuch a quarter muft have been almoft equivalent to commands; and inftead of feverely animadverting on the extent of Park's compliances, we ought, perhaps, rather to be furprifed, that more was not yielded to an influence which muft have been nearly unlimited." Mr. Park is known to have regretted that fome parts of his publication, relating to the flave-trade, had been mifunderftood, and applied in a fenfe which it was not intended they fhould have been. The writer of this fketch of his life knew, from perfonal intercourfe, that he lamented any fufpicion of his integrity fhould attach to this part of his publication; and we can well imagine, that he did not perceive the bias of his mind, or the caufes that produced it, which were apparent to every one befides himfelf. Such a bias would naturally refult from the affiftance afforded by Mr. Edwards in the compofition of Mr. Park's work, and from the influence attending the connection that fubfifted between them. How far Mr. Edwards's affiftance might extend, it is difficult to fay; but of this we are certain, that it was not fuch as to affect the authenticity of the work itfelf, or the literary reputation of Mr. Park; we regret, however, that in deference to Mr. Edwards's judgment or authority, Mr. Park fhould admit into his narrative fome reflections pertaining to the flave-trade, which fhould have given occafion for concluding that he was friendly to its continuance, or that he fhould have omitted any favourable opportunity that occurred for expreffing in an explicit manner his real fentiments concerning it. But it is now needlefs to purfue this kind of difcuffion. The narration of Mr. Park, written as we have reafon to believe by himfelf, entitles him to refpect as an author; but he has other more unequivocal claims to grateful and honourable remembrance, as a perfon who hazarded much in making geographical difcoveries, and who maintained in traverfing unknown countries, and in very trying fituations, a degree of firmnefs and felf-poffeffion that has feldom or ever been furpaffed.

After the publication of his Travels, he returned to Scotland in the fummer of 1799; and on the 2d of Auguft in that year, he married a daughter of Mr. Anderfon of Selkirk, with whom he had ferved his apprenticefhip. In the month of October 1801, he fettled at Peebles, with a full purpofe of purfuing his medical profeffion; but as he devoted much of his time and attention to the poor, the profits of his bufinefs were inconfiderable; nor could he forbear wifhing for a change of fituation that would be more advantageous. His views, however, were directed towards a fecond African miffion. A profpect of this kind was prefented to him by a letter from fir Jofeph Banks, foon after the fignature of the preliminaries of peace with France, in October 1801; but it was not till the autumn of the year 1803, that a fpecific propofal was made to him for this purpofe. Previoufly difpofed to accept it, he did not long hefitate in announcing his purpofe; and, accordingly he took leave of his friends, and left Scotland in December 1803, confidently expecting that he fhould foon embark for the coaft of Africa. A variety of circumftances occurred which threatened the total failure of the expedition; however, in a courfe of time all difficulties were obviated; the objects and plan of the undertaking were fettled to the fatisfaction of Mr. Park, and he received a commiffion from government in January 1805, for conducting and executing it. To himfelf was granted a brevet commiffion of a captain in Africa; and to his friend Mr. Alexander Anderfon a fimilar commiffion of lieutenant; and Mr. Scott was appointed to attend him as a draftfman. He was empowered to enlift at Goree any number of the garrifon that would be neceffary for his purpofe, not exceeding 45, with fuch bounties as would induce them cheerfully to accompany him. From Goree he was directed to proceed up the river Gambia, and thence, croffing over to the Senegal, to march by fuch routs as he fhould find moft eligible to the banks of the Niger. The great object of his journey was to purfue the courfe of this river as far as it could be traced; to eftablifh a communication and intercourfe with the different nations on the banks; to obtain all the knowledge in his power refpecting them; and to afcertain various points which he had ftated in his Memoir. Mr. Park was empowered to draw for any fum which he might want, not exceeding 5000*l*.

When the preparations for the expedition were completed, Meffrs. Park, Anderfon, and Scott, proceeded to Portfmouth,

mouth, and being there joined by four or five artificers from the dock-yards appointed for the service, they set sail on the 30th of January 1805, and on the 28th of March arrived at Goree. On the 27th of April 1805, Mr. Park took his departure from Kayee, a small town on the Gambia, a little below Pisania, having previously engaged a Mandingo priest, named Isaaco, who was also a travelling merchant, and much accustomed to long inland journies to serve as a guide to his caravan. On the 11th of May, he arrived at Madina, the capital of the kingdom of Woolli, and on the 14th he reached Kussai, on the banks of the Gambia, where the river is about 100 yards broad, and has a regular tide. On the 18th, he crossed the river Nerico, 60 feet broad four feet deep, flowing at the rate of two miles an hour, and with a heat at two o'clock of 94° Fahrenheit, and arrived at Jallacotta, the first town of Tenda, at sun-set. On the 20th reached Tendico or Tambico, a village belonging to Jallacotta, lat. 13° 53′, half a mile from which is a pretty large town, called Bady. May 21st at eight, halted at Jeningalla, near Bufra or Kabatenda. On the 24th, stopped at Mansafara, which consists of three towns, contiguous to each other, and distant from the village of Nittakorra, on the north bank of the Gambia, eight miles due south. Next day entered the Tenda or Samakara wilderness, and halted at Sooteetaba, lat. 13° 33′ 33″; after leaving this place, crossed the first range of hills, which afforded a beautiful route and prospect. On the 26th reached Bee-creek, lat. 13° 32′ 45″, W. long. 10° 59′, where men and beasts were attacked by an immense number of bees, who seemed for a time to have completely terminated their journey. Arrived at Sibikillin, after travelling four miles, on the 27th; and on the 28th, arrived at Badoo, a small town, consisting of about 300 huts, near which is another town of the same name; but the two towns are distinguished by the names of Sansanding and Sansanba, at each of which customs are demanded of all coffles or caravans, lat. 13° 32′. From Badoo proceeded to Tambacunda, about four miles east of it, and about four miles distant from the river Gambia, south of Badoo: leaving Tambacunda on the 30th, entered the woods, and at dark arrived at Tabba Gee, which was left at day-break the 31st of May, and halted during the heat of the day at a small village, called Mambari. On the 1st of June, arrived at Julifunda, a considerable trading town, containing about 2000 persons, who trade on credit, and are called "Juli," by way of distinction from the Slatee, who trades with his own capital. At this place, lat. 13° 33′, they were exorbitantly taxed by Mansa Kussan, who is reckoned one of the most avaricious chiefs on the road. On the 4th of June, arrived at Baniserile, a Mahometan town, whose chief, Fodi Braheima, was one of the most friendly men they met with, lat. 13° 35′. The kingdom of Dentila is famous for its iron; and the flux used for smelting it is the ashes of the bark of the kino-tree. On the 7th of June, in prosecution of their journey, crossed the bed of a stream that runs towards the Faleme river, called Samakoo, on account of the vast herds of elephants which wash themselves in it during the rains. At noon of the 8th, reached Madina, and halted by the side of Faleme river; in the evening went to Satadoo, one mile east of the river. On the 10th reached a small town called Shrondo at sun-set; here they were alarmed by a tornado, which was the commencement of the rainy season, and extremely pernicious to the attendants on the expedition.

In the vicinity of this town are some gold-mines, which were inspected, and which afforded occasion for witnessing the expeditious mode practised by the female natives, for separating the particles of gold from the sand. Leaving Shrondo on the 12th, they travelled along the bottom of the Konkodoo mountains, which are very steep precipices of rock, from 80 to 200 or 300 feet high, and at noon reached Dindikoo, near which are gold-pits. On the 13th, they arrived at a small village called Fankia, four miles N.W. from Binlingalla, lat. 13° 22′ 30″. On the 15th, they proceeded from Fankia to the delightful village of Toombin, and on the 17th travelled from Serimanna to Fajemmia, a small village, fortified with a high wall, the chief of which is the most powerful in Konkodoo, and has in subjection the whole country from Toombin to the Ba Fing. At Fajemmia, N. lat. 13° 35′, the customs paid to the chief are very high. On the 20th, they arrived at an almost deserted village, called Nealakalla, close to the Ba Lee or Honey river, where they saw two crocodiles and an incredible number of large fish. On the 21st, they passed the village of Boontoonkooran, and halted for the night at the village of Dooggikotta; and the next day they observed many very picturesque and rocky hills during their march, and in the evening halted at the village of Falifing, situated on the summit of the ascent which separates the Ba Lee from the Ba Fing. On the 23d, they arrived at the village of Gimbia, or Kimbia; and about noon reached Sullo, an unwalled village, at the bottom of a rocky hill, at which place horse-flesh is much valued as food, and where they observed on the adjacent rocks numbers of large monkeys. On the next day, they arrived at Secoba, lat. 13° 27′ 26″, and here they halted on the 25th. On the following day, they arrived at the village of Konkromo, about seven miles east of Secoba, W. long. 8° 6′, near the river Ba Fing, a large river quite navigable, and which they crossed in canoes on the 27th; and on the next day, they passed by several heaps of stone, precisely the same with those that are called in Scotland cairns. In pursuing their march, they were alarmed by herds of lions and wolves, and on the 30th, reached a small town, called Kandy. On the 2d of July, they arrived at Koeena, a village encompassed by a wall, and where they were terrified by the roaring and assault of several young lions. On the 3d, they arrived, after a march of six miles, at Koombandi; and at sun-set reached Fonilla, a small walled village, on the banks of the Wonda, which they crossed on the 4th in canoes, Isaaco having had a surprising escape from the seizure of a crocodile. On the 5th, they arrived at a village called Boolinkoomboo, sometimes Moiaharra; and on the 10th, left this village; and eight miles N.E. passed the village of Serrababoo, and a little before sun-set reached Saboofeera, (Dooty Matta,) a scattered unwalled village, lat. 13° 50′. From Saboofeera, or Mallaboo, they pursued their march on the 11th to Keminoom, or Maniakorro, a walled town, strongly fortified, lat. 14°; near which the river Ba Lee runs with great velocity, and breaks into small cataracts. This place is notorious for theft and impudence, and they were glad to leave it on the 13th, and to pursue their march by a walled village, called Nummaboo, to the banks of the Ba Woolima, where they arrived on the 19th; and having crossed the river by means of a wooden bridge of singular construction, they reached Mareena on the 21st, where they suffered depredation; and on the 22d, they arrived at Bangassi, six miles from Mareena, a large town, four or five times larger than Maniakorro, and fortified in a similar manner. On the 27th, they arrived at Nummasoolo, a large but much ruined town, and which they left on the 30th. On the

31ſt, they halted at Sobee, a town, the walled part of which ſerves as a citadel. On the 2d of Auguſt, they halted at Balanding; and on the 3d, at Balandoo; and on the 4th reached Koolihori, a town partly walled, but having the greater part of its huts without the walls. On the 6th, they reached Ganifarra, a ſmall beggarly village. On the 9th, they croſſed the Ba Woolli, a very deep river, flowing at the rate of four or five miles *per* hour. They purſued their route, until on the 13th, thoſe of them who ſurvived reached Koomikoomi, where they halted; lat. 13° 16′ 29″. On the 15th, they reached Doombila, where Mr. Park met with an old friend, Karfa Taura, a worthy negro whom he had known, and whoſe kindneſs he had experienced in his former travels. From Doombila, they proceeded on the 18th to Toniba, and from thence they aſcended the mountains ſouth of it, till having attained the ſummit of the ridge which ſeparates the Niger from the remote branches of the Senegal, Mr. Park had the ſatiſfaction of once more ſeeing the Niger rolling its immenſe ſtream along the plains. But this ſatiſfaction was accompanied by the mortifying reflection, that three-fourths of the ſoldiers had died on their march, and that in their weakly ſtate, they had no carpenters to build the boats in which they propoſed to proſecute their diſcoveries. It was, however, a pleaſing conſideration, that in conducting a party of Europeans, with immenſe baggage, through an extent of more than 500 miles, he had always been able to preſerve the moſt friendly terms with the natives; and hence he was warranted to infer, that with common prudence, any quantity of merchandize may be tranſported from the Gambia to the Niger, without danger of being robbed by the natives; and that this journey may be performed in the dry ſeaſon, with a probability of not loſing more than three or at moſt four out of fifty. But Mr. Park was unfortunate in undertaking ſuch a journey with the proſpect of the rainy ſeaſon, and the event proved, that this ſeaſon ſet in before his journey to the Niger was more than half completed. The effect produced on the health of the ſoldiers by a violent rain, preceded and accompanied by tornadoes, on the 18th of June, was almoſt inſtantaneous; twelve of them at once were dangerouſly ill, and from this time, the great mortality commenced, which was ultimately fatal to the expedition. When he reached the Niger at Bambakoo, where the river begins to be navigable, on the 19th of Auguſt, there remained out of thirty-four ſoldiers and four carpenters, who left the Gambia, only ſix ſoldiers and one carpenter, and the principal perſons who compoſed the expedition, beſides Mr. Park himſelf, were three, *viz.* Mr. Anderſon, Mr. Scott, and lieutenant Martyn, who were more or leſs affected by the diſeaſe of the climate; the two former very ſeriouſly, ſo that Mr. Scott was left behind at Koomikoomi, and died without reaching the Niger. Mr. Park had been ſlightly affected, and it is wonderful, that the anxiety and fatigue which he muſt have experienced did not break down both his ſpirits and his ſtrength.

Having arrived at the Niger, Mr. Park, and the few companions that remained, embarked in a canoe on the 22d of Auguſt, and were borne away by the current at the rate of about five knots *per* hour. The river is at the point of embarkation an Engliſh mile broad, and at the rapids, of which there are three principal ones, it ſpreads out to nearly twice that breadth. On the 23d, they arrived at Marraboo, where they were joined by thoſe who came by land. Iſaaco was immediately diſpatched to Sego, the capital of Bambara, to negociate with Manſong, the ſovereign, for a free paſſage through his dominions, and whilſt Mr. Park waited for his return, he was ſeized with the dyſentery, that threatened the termination of all his projects. But by the aid of medicine and the advantage of a good conſtitution, he was ſoon reſtored to health. Many difficulties and delays occurred in the negociation, which was conducted on the part of Mr. Park with ſingular judgment and addreſs; but at length, after many unfavourable rumours, which kept his mind in a ſtate of diſtreſſing ſuſpenſe, Manſong deputed a meſſenger to conduct him towards Sego. Under his eſcort, he left Koolikorro (N. lat. 12° 52′) on the 13th of September, and enjoyed the beautiful views which his voyage afforded him; "the river," as he ſays, "being ſometimes as ſmooth as a mirror, at other times ruffled with a gentle breeze, but at all times ſweeping us along at the rate of ſix or ſeven miles *per* hour." On the 14th, they departed from Deena, where they had lodged, and arrived at Yamina, (lat. 13° 15′,) where they halted on the 15th; and on the 16th reached Samee (lat. 13° 17′). A deputation of Manſong's friends viſited Mr. Park, in order to hear from himſelf a ſtatement of his views and purpoſes in the voyage he was undertaking. His ſtatement was ſatiſfactory to the grandees that had executed this commiſſion, and Mr. Park was aſſured of permiſſion to purſue his voyage, and of protection from Manſong as far as his power extended. The king and his courtiers were much gratified by the preſents which they received on the occaſion. Accordingly, on the 26th of September, Mr. Park proceeded from Samee to *Sanſanding;* which ſee. Here he intended to provide a proper veſſel for his further navigation down the Niger; but it was with difficulty that he procured from Manſong and his ſon, in return for the preſents he had given them, two decayed canoes, which merely afforded him materials for conſtructing with his own hands, and ſome aſſiſtance from one of the ſurviving ſoldiers, a flat-bottomed boat, to which he gave the ſounding title of His Majeſty's Schooner, the Joliba. In the meanwhile, Mr. Park was informed of the death of Mr. Scott, and he had now occaſion to lament the loſs of his friend Mr. Anderſon, who died, after a lingering attack of four months, on the 26th of October. The ſenſibility he expreſſed on this occaſion did honour to his feelings, and yet conſidering his preſent perilous ſituation, and the dreary and diſcouraging proſpects which preſented themſelves with regard to the projects of his undertaking, he muſt poſſeſs a very high degree of equanimity, firmneſs, and ſelf-poſſeſſion. On the 16th of November, the ſchooner having been completed, and every thing in Mr. Park's power to command being ready for the voyage, he cloſes his journal; and in the courſe of the ſucceeding days previous to his embarkation, which was on the 19th, he wrote ſeveral letters to his friends and kindred in England and Scotland. In theſe letters, we diſcover traces of that deliberate and inflexible reſolution, without effort or oſtentation, which proved a diſtinguiſhing feature of his character. From this period, we have no ſtrictly authentic information concerning Mr. Park, or the progreſs and termination of his expedition. In the courſe of the year 1806, conjectures and reports agitated the public mind; and the agitation was aggravated, by intelligence communicated by the native traders from the interior of Africa to the Britiſh ſettlements on the coaſt; whence it was concluded, that Mr. Park and his companions were killed. In conſequence of theſe unſatiſfactory and alarming rumours, lieutenant colonel Maxwell, then governor of Senegal, obtained permiſſion from government to engage a proper perſon to inveſtigate and aſcertain the truth of theſe rumours.

rumours. Accordingly, he engaged Isaaco, Mr. Park's guide, to conduct this business. In January 1810, Isaaco left Senegal, and returned on the 1st of September, 1811, fully confirming the reports of Mr. Park's death. His journal, including another from Amadi Fatouma, the guide who had accompanied Park from Sansanding down the Niger, was delivered to the governor, and transmitted by him, after having been translated from Arabic to English, to the secretary of state for the colonial department. From Amadi Fatouma's journal we learn, that the conductors of the expedition went from Sansanding to Silla, where Mr. Park had ended his first voyage; and that from thence, Mr. Park, Martyn, three other white men, three slaves, and Amadi, as guide and interpreter, nine in number, proceeded in a canoe to Ginne; and as they passed Sibby, or Dibbie, they were attacked by an armed force in three canoes, which they repulsed. Again at Rakbara, or Kabra, they repelled another assault, and in passing Tombuctoo, they resisted another similar attack, escaping by force and by the slaughter of many of the natives. As they advanced, the number of hostile canoes increased, till at length it amounted to 60, and in self-defence they killed a very considerable number of persons; their own number being now reduced by the death of one of the white men to eight. At length having passed Kaffo and Gourmon, and having supplied themselves with provisions, they entered the country of Haoussa. The king of the country having received information from the chief of Yaour, a village in this district, that the white men had departed without giving them any presents, sent an army to a village called Boussa, near the side of the river, which was posted on the top of a rock that traversed the river, in which rock there was a large cleft or opening, that admitted the water to pass in a strong current; and when Mr. Park arrived at this opening and attempted to pass, he was attacked with lances, pikes, arrows, and stones; against which he for some time resolutely defended himself, till at length, overpowered by numbers and fatigue, and unable to keep up the canoe against the current, Mr. Park laid hold of one of the white men and jumped into the water; Mr. Martyn did the same, and they were drowned in the stream in attempting to escape. One slave was left, and they took him and the canoe, and carried them to the king. Amadi, after having been kept in prison for three months, was released; and obtained information from the surviving slave, concerning the manner in which Mr. Park and his companions had died. Nothing was left in the canoe but a sword-belt, of which the king had made a girth for his horse; and this belt Isaaco afterwards recovered. Amadi, according to Isaaco's report, was a good upright man, and delivered the above account to him on oath, nor could he have any interest in deceiving him. From circumstances it is concluded, that Mr. Park died four months after his departure from Sansanding.

On Mr. Park's disposition and character it is needless to enlarge, after the detail of the principal transactions and events of his life given in this article and the article Africa. In private life his conduct was exemplary, as a son, a husband, and a father. As to his person, he was about six feet high, and well proportioned. His whole aspect was interesting, and his corporeal frame robust and active, and fit for great exertion, and for enduring severe hardships. His family consisted of three sons and one daughter, who with their mother survived to lament the loss of him. See the second volume of his Travels, a new edition of which was published in 1816, 8vo. For some other particulars, we refer to the articles Africa, Niger, and Zaire.

PARKER, in *Geography*, a township of Butler county, in Pennsylvania, having 399 inhabitants.

PARKER's Town, a town of Kent county, in Vermont, having 100 inhabitants.

PARSONSFIELD, l. 4, *r.* 1763.

PARTHENOS. See Parthenia.

PARVATI, col. 2, l. 34, *dele* the point after Kailasa. Col. 3, l. 6, for cap *r.* cup. Col. 4, l. 35, for beauty's *r.* brevity's. Col. 5, l. 2, for *Karlikya* r. *Kartikya;* l. 3 from bottom, for central is *r.* central eye is.

PASQUATUNK, in *Geography*, a county of North Carolina, containing 7674 inhabitants, of whom 2295 were slaves in 1810.

PASTE-WORK, in *Calico-Printing*. See *Discharge-*Work.

PATMOS, l. 14, add—Such is the account given by Sonnini; but Dr. Clarke (Travels, vol. vi.) informs us, that he visited the library, which is a small oblong chamber, with a vaulted stone roof, and found it to be nearly filled with books of all sizes in a most neglected state; some lying upon the floor, a prey to the damp and worms; others standing confusedly on the shelves, which were printed volumes, some of which were well bound, and in good condition; but neither of the superiors of this college was able to read. At the extremity of the chamber he found a heap of Greek MSS., some of which were of the highest antiquity; amongst other specimens of Grecian calligraphy, the author found a copy of the 24 first dialogues of Plato, written upon vellum, in the same exquisite character, which remained in the hands of his friend professor Porson until his death. But it is now, with the other MSS. from Patmos, &c. in the Bodleian library at Oxford.

PATRICK, l. 2, *r.* 4699 inhabitants, of whom 724 are slaves.

Patrick *Town*, a town of America, in the district of Maine, and county of Lincoln, having 138 inhabitants.

PATROCLEIA, or Patroclea, in *Geography*, one of the Grecian islands, called by various other names, as Gaitharonese (Asses' isle), the island of Ebony, Gaidromesa, Gardener's, &c. which difference of names has caused it to be multiplied and represented as a cluster of islands rather than as one island. It has been said, that ebony grows upon this island; but Dr. Clarke and his companions could not find a single specimen of the Ebenus, either cretica or pinnata.

PATTON, a township of Centre county, in Pennsylvania, having 297 persons.

PAVAKA, for sacrifices *r.* sacrificers.

PAUCARCOLLA, for Paucarcotta.

PAULSBURGH, in *Geography*, a township of Coos, in New Hampshire, having 14 inhabitants.

PAXTON, l. 2, *r.* 2232; l. 3, *r.* 2180—2998; l. 6, *r.* 619. Add—Also, a township of Ohio, in Ross county, having 661 inhabitants.

PEACHAM, l. 3, *r.* 1301.

PEARL River, l. 12.—This is the largest river between Mississippi and Mobile. Before it enters the Regulets or Rigolets, it divides into several channels.

PEARL-SPAR. See Mineralogy, *Addenda*.

PEARL-STONE. See Mineralogy, *Addenda*.

PEASE, in *Geography*, a township of Belmont county, in Ohio, having 1379 inhabitants.

PEA-STONE. See Mineralogy, *Addenda*.

PEDAL Harp. The machinery of this instrument was invented by M. Simon at Brussels, about the year 1760, and was soon adopted in France. In the eighth volume of the folio Encyclopædia, printed in 1765, it is said, that "the sounds of the pedal harp are more sweet and melodious than those thofe of any other ftringed inftrument played with the naked fingers; that it is more touching and proper to exprefs tendernefs and grief than other affections of the heart; that the ftrings muft be moderately ftruck, otherwife the mufic would be as confufed as on the harpfichord or pianoforte without dampers; and, laftly, the author of the article (the comte de Hoghenfki) fays, that the Irifh, of all the people in the world, are thofe reputed to perform the beft on the harps of their country.

PEDILUVIUM, in *Medicine*, from *pedes*, the *feet*, and *lavo*, *I wafh*, a bathing or immerfion of the feet in warm water.

The older practitioners reforted to the pediluvium in a variety of difeafes upon hypothetical principles; conceiving that, by drawing the blood into the veffels of the feet, it relieved diftant organs, as the head or lungs, which were overcharged by a ftate of inflammation in congeftion: hence it was recommended in apoplexy, pleurify, and other topical affections of diftant parts. This doctrine of revulfion, however, as applied to the operation of the pediluvium, is more queftionable than under any other application of it; for as, like the general warm-bath, it fomewhat accelerates the general circulation, it muft be a doubtful remedy in cafes where the motion of the heart and arteries is already too great.

The operation of the pediluvium is, in fact, fimply that of a partial warm-bath; and its ufe is at prefent limited to thofe diforders in which that more general remedy is indicated; being a more practicable and eafy expedient, though neceffarily much lefs effectual in its influence. The moft valuable and common application of the pediluvium is at the onfet of febrile difeafes, while a certain degree of chillinefs is prefent. Ufed in this ftate previous to going to bed, it contributes, by moderately exciting the heart and arteries, to equalife the circulation, and determine the blood to the furface, whence a flight diaphorefis often follows its ufe under thefe circumftances. Thus the attack of a commencing catarrh or rheumatifm is often warded off by the ufe of pediluvium, aided by other proper means; and to this kind of treatment its operation is probably to be limited. In the more advanced ftage of febrile difeafes, efpecially when there is delirium, or a general heat, its advantages are very problematical.

PEDRICK ISLAND, in *Geography*, a townfhip of Plymouth county, in Maffachufetts, having 7 perfons.

PEELING, l. 2, *r*. 203.

PEEPEC, a townfhip of Ohio, in Rofs county, containing 670 perfons.

PEGYPSENT, a town of Maine, in the county of Cumberland, having 805 inhabitants.

PELHAM, l. 3, *r*. 1185; l. 7, *r*. 998.

PEMBROKE, in America, l. 3, *r*. 2051. Col. 2, l. 2, *r*. 1153.

PENCADER, a hundred of Newcaftle county, in the diftrict of Delaware, having 1865 perfons.

PENDLETON, l. 4, *r*. 4239 inhabitants, of whom 202 are flaves; l. 6, *r*. 22,897; l. 23, *r*. 3485. Col. 2, l. 1, *r*. 2940; l. 2, *r*. 346.

PENDULUM, col. 10, l. 16, add—The lateft and moft correct experiments that have been made for determining the length of the pendulum vibrating feconds are thofe of captain Kater. Thefe experiments were performed with a pendulum conftructed on the following principle: In illuftrating this principle he ftates, as a known fact, that the centres of fufpenfion and ofcillation are reciprocal; or, in other words, that if a body be fufpended by its centre of ofcillation, its former point of fufpenfion becomes the centre of ofcillation, and the vibrations in both pofitions will be performed in equal times. As the diftance of the centre of ofcillation from the point of fufpenfion depends on the figure of the body employed, if the arrangement of its particles be changed, the place of the centre of ofcillation will alfo fuffer a change. Suppofe then a body to be furnifhed with a point of fufpenfion, and another point on which it may vibrate, to be fixed as nearly as can be eftimated in the centre of ofcillation, and in a line with the point of fufpenfion and centre of gravity. If the vibrations in each pofition fhould not be equal in equal times, they may be readily made fo, by fhifting a moveable weight, with which the body is to be furnifhed, in a line between the centres of fufpenfion and ofcillation; when the diftance between the two points about which the vibrations were performed being meafured, the length of a fimple pendulum, and the time of its vibration, will at once be known, uninfluenced by any irregularity of denfity or figure. This principle being adopted for the conftruction of the pendulum, the next object of importance is to felect a mode of fufpenfion equally free from objection. For this purpofe a knife-edge was preferred, and the grounds of preference are briefly ftated. The pendulum is formed of a bar of plate brafs, an inch and a half wide and one-eighth of an inch thick. Through this bar two triangular holes are made, at the diftance of 39,4 inches from each other, to admit the knife-edges. Four ftrong knees of hammered brafs, of the fame width as the bar, fix inches long, and three-quarters of an inch thick, are firmly fcrewed by pairs to each end of the bar, in fuch a manner, that when the knife-edges are paffed through the triangular apertures, their backs may bear fteadily againft the perfectly plane furfaces of the brafs knees, which are formed as nearly as poffible at right angles to the bar, which is cut of fuch a length, that its ends may be fhort of the extremities of the knee-pieces about two inches. Two flips of deal 17 inches long, and of the fame thicknefs as the bar, are inferted in the fpaces thus left between the knee-pieces, and are firmly fecured there by pins and fcrews. Thefe flips of deal are only half the width of the bar; they are ftained black, and in the extremity of each a fmall whale-bone point is inferted, for the purpofe of indicating the extent of the arc of vibration. A cylindrical weight of brafs, in diameter three inches and a half, and an inch and a quarter thick, and weighing about 2 lbs. 7 oz., has a rectangular opening in the direction of its diameter, to admit the knee-piece of one end of the pendulum. This weight being paffed on the pendulum, is fo thoroughly fecured there by means of a conical pin fitting an opening made through the weight and knee-pieces, as to render any change of pofition impoffible. A fecond weight of about feven ounces and a half is made to flide on the bar near the knife-edge at the oppofite end; and this weight may be fixed at any diftance on the bar by two fcrews with which it is furnifhed. A third weight, or flider of four ounces, is moveable along the bar, and is capable of nice adjuftment by means of a fcrew fixed to a clamp, which clamp is included in the weight. This flider is defigned to move near the centre of the bar; and it has an opening, through which may be feen divifions, each equal to one-twentieth of an inch, engraved on the bar; and a line is drawn on the edge of the opening to ferve as an index for determining the diftance of the flider from the middle of the bar. The knife-edges are made of that kind of fteel prepared in India, and called wootz. Their form is triangular, and their length an inch and three-quarters. They were ground on a plane tool, fo as to enfure their having a perfectly ftraight edge. They were then carefully finifhed on a plane green

 hone,

hone, giving them ſuch an inclination as to make the angle on which the vibrations are performed about 120 degrees. Before the knife-edges were hardened, each was tapped half-way through, near the extremities, to receive two ſcrews, which being paſſed through the knee-pieces, drew the knife-edges into cloſe contact with them; the ſurfaces of both having been previouſly ground together to guard againſt any ſtrain which might injure their figure. For the deſcription of the ſupport and other apparatus of this pendulum, illuſtrated by drawings, and the method of determining the experiments, and certain other obſervations, our limits require us to refer to the Phil. Tranſ. for the year 1818, pt. i.

From his experiments and obſervations, captain Kater concludes, that the length of the pendulum vibrating ſeconds in vacuo at the level of the ſea, meaſured at the temperature of 62° of Fahrenheit, appears to be

	inches.
By ſir G. Shuckburgh's ſtandard -	39,13860
By general Roy's ſcale - -	39,13717
By Bird's parliamentary ſtandard -	39,13842

The latitude of the place of obſervation being 51° 31′ 8″,4 north.

PENKRIDGE. In 1811 this townſhip contained 196 houſes, and 923 perſons; *viz.* 438 males, and 485 females.

PENN's, l. 2, *r.* 3798. Add—Alſo, a townſhip of Northumberland county, having 2072 inhabitants.

PENN's *Neck*, l. 2, add—*Upper Penn's Neck* contains 1638, and the *Lower* 1163 inhabitants.

PENNSBOROUGH, EAST. Add—containing 2365 perſons.

PENNSBOROUGH, *Weſt.* Add—It contains 1264 perſons.

PENNSYLVANIA, l. 7, add—By the cenſus of 1810, the number of counties is 43, the five following counties having been added; *viz.* Cambria, Indiana, Clearfield, Jefferſon, Tioga, Potter, M'Kean, and the city and county of Philadelphia being ſeparated. The number of inhabitants is ſtated to be 810,091, including 795 ſlaves. See each county, and UNITED STATES.

PENOBSCOT, l. 5, *r.* 1302.

PEORIA, a townſhip of St. Clair, in the Illinois territory, having 93 inhabitants.

PEPPERELL, l. 4, *r.* 1333.

PEQUANOCK. Add—containing 3853 inhabitants.

PERCHLORIC ACID, in *Chemiſtry.* See CHLORINE.

PERGASITE. See MINERALOGY, *Addenda.*

FERICARDIUM, *Liquor of*, *Chemical Compoſition of.* See FLUIDS, *Animal.*

PERQUIMINS, l. 5, *r.* 6052—2017.

PERSIA, col. 8, l. 18 from bottom, *r.* See PERSIAN *Language.* Col. 13, l. 12 from bottom, *r.* Kejer. At the end, *r.* Kinneir's.

PERSIAN GULF, &c. l. 1, for *Omar* r. *Oman.*

PERSON, l. 2, *r.* 6442; l. 3, *r.* 2573.

PERSPECTIVE, col. 4, l. 2, for plane *r.* line, and inſert radial before parallel; l. 13, for parallel lines *r.* parallel planes; l. 19, for point *r.* line. Prob. xxi. Meth. 1. l. 12 and 13, the lines which ſhould have been drawn from Q to *c* and *d* are in the plate improperly drawn from the point 3. Method 8. l. 3, *r.* repreſentation. Method 11. l. 13, for and *a e*, *r.* and *a s*.

PERTH, col. 4, l. 23 from bottom, for 4715 *r.* 4510; and after 16,948 inhabitants, *r. viz.* 7687 males, and 9261 females.

PERTH-AMBOY, l. 11, *r.* 815 inhabitants.

PERTHSHIRE. In 1811 this ſhire contained (excluſive of the town) 21,894 houſes, and 116,975 perſons; *viz.* 55,177 males, and 61,799 females: 8500 families being employed in agriculture, and 9602 in trade, manufactures, or handicraft.

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PERU, in America. Add—Alſo, a town of Berkſhire county, in Maſſachuſetts, containing 912 perſons.—Alſo, a townſhip of Bennington county, in Vermont, having 239 inhabitants.

PERUVIAN BARK, *Chemical Properties of.* See CINCHONA.

PETALITE. See MINERALOGY, *Addenda.*

PETERSBOROUGH, in America, l. 3, *r.* 1537.

PETERSBURGH, a town of Huntingdon county, in Pennſylvania, having 194 inhabitants. Col. 2, l. 19, for Albert *r.* Elbert. At the cloſe, add—It contains, together with the county and Elberton-town, 12,156 inhabitants; the ſlaves of the county being 4291, thoſe of the town 225, and thoſe of Elberton 58.

PETERSHAM, l. 6, *r.* 1490.

PETROLEUM. See MINERALOGY, *Addenda.*

PHÆNICOPHEUS, MALKOKA, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak ſtrong and ſlightly incurved; feet ſimple, two toes pointing forwards, and two backwards, the outward toe the longeſt; head naked round the eyes and warted. This genus is readily diſtinguiſhed from Cuculus by the naked and papillated ſpace that ſurrounds the eyes, and from Polophilus by the ſtructure of the hinder toes; the head is ſomewhat ſquare, and very thick; the wings rather ſhort, and the tail remarkably long. Shaw.

PHANAGORIA for PHANAGORA.

PHARMACOPŒIA EQUINA, a diſpenſatory adapted to the purpoſes of veterinary practitioners, and deſigned more eſpecially to comprehend thoſe drugs and medicines that pertain to the diſeaſes of the horſe. Such a pharmacopœia is a deſideratum in veterinary ſcience. The drugs and preparations that are chiefly uſed are deſcribed, as far as our limits would allow, under their ſeveral titles on the diſorders to which they are appropriated. The form under which they are moſt commonly adminiſtered is that of balls, under which many of them are recited, and the general method of preparing them deſcribed. Veterinary writers have arranged theſe balls under ſeveral denominations, founded on the medical purpoſes for which they are adminiſtered. Accordingly we have *alterative*, *purging*, *diuretic*, *cordial*, *aſtringent*, *reſtorative*, and *diaphoretic* balls; for the preparation of which a variety of formulæ has been given by modern practitioners.

For *alterative* balls we have the following inſtructions: Mr. J. Lawrence directs flowers of ſulphur and cream of tartar, of each ½ oz., 1 dr. of canella alba in powder, and treacle *q. ſ.*, half of which ball ſhould be given twice a day on an empty ſtomach:—or, flowers of ſulphur, cream of tartar, gum guaiacum and turmeric, of each 2 drs., and 1 dr. of canella alba, may be made into one or two balls with treacle, and given as above:—or, prepared antimony and gum guaiacum, of each from 3 to 4 drs. prepared with treacle, may be given every day:—or, antimonial Æthiops, from 4 to 6 drs. made into a ball with treacle, may be adminiſtered every night for a fortnight, and diſcontinuing it for a week, reſumed for another fortnight; which is ſaid to have great effect in the farcy, the mange, and obſtinate dry coughs in horſes. Mr. R. Lawrence recommends a ball made of 1 dr. of tartariſed antimony, 1 oz. of liquorice-powder, and ½ oz. of Venice turpentine, given

given every other night for four or five nights, for horfes affected with greafe. Mr. White directs a compofition of 6 oz. of levigated antimony, 8 oz. of flowers of fulphur, mixed with treacle, to be made into 8 balls:—or, 4 oz. of powdered rofin, 3 oz. of nitre, 1 oz. of tartarifed antimony, mixed with treacle, and divided into 8 balls:—or, 2 oz. of unwafhed calx of antimony, 2 drs. of calomel, and 4 oz. of powdered anifeeds, mixed with treacle, and divided into 8 dofes:—or, ½ dr. of calomel, 1 dr. of aloes, 2 drs. of Caftile foap, 30 drops of oil of juniper, and ½ oz. of powdered anifeeds, made into a ball with fyrup, which ferves for one dofe, and which Mr. W. calls the "mercurial" alterative. Mr. Taplin recommends levigated antimony, flowers of fulphur, and nitre, of each 3 oz., 10 oz. of Caftile foap, 3 drs. of oil of juniper, formed into a mafs with honey *q. f.*, and divided into 12 balls, and one to be given every morning for three or more weeks, in cafes of greafe, after purging with a common ball:—or, milk of fulphur, prepared antimony, cream of tartar, cinnabar of antimony, of each 5 oz., 4 oz. of Æthiops' mineral, and honey *q. f.*, and the mafs divided into 12 balls, one of which fhould be given every morning, for a month, in the farcy.

Purging balls are prepared, according to the directions of Mr. Taplin, of 1 oz. of focotorine aloes, 2 drs. of rhubarb, jalap, and cream of tartar, of each 1 dr., 2 fcruples of ginger, oil of cloves and oil of anifeed, of each 20 drops, and fyrup of buckthorn *q. f.* Mr. White orders 5 drs. of focotorine aloes, 2 drs. of prepared natron, 1 dr. of aromatic powder, 10 drops of oil of caraway, with fyrup *q. f.*:—or, 7 drs. of focotorine aloes, ½ oz. of Caftile foap, 1 dr. of ginger, and 10 drops of oil of caraway, with fyrup *q. f.*:—or, 1 oz. of focotorine aloes, 2 drs. of prepared natron, 1 dr. of aromatic powder, 10 drops of oil of anifeeds, and fyrup *q. f.* Mr. White affures us, that the fecond of his compofitions is generally fufficient for ftrong horfes, and that he has never had occafion for a more active purge than the laft. Mr. Ryding directs 6 drs. of Barbadoes aloes, 1 fcruple of ginger, and foft-foap *q. f.*:—or, ½ oz. of Barbadoes aloes, 1 dr. of calomel, and mucilage of gum arabic *q. f.* The firft he calls a mild purging ball, and the latter the mercurial purging ball. Mr. J. Lawrence directs 2 or 3 balls to be made of the following ingredients; *viz.* from 12 to 14 drs. of focotorine aloes, from 1 to 2 oz. of cream of tartar, a tea-fpoonful of powdered ginger, a table-fpoonful of olive-oil, and fyrup of buckthorn or treacle, *q. f.* Mr. R. Lawrence, for the fame purpofe, orders 9 drs. of Barbadoes aloes, and 1 dr. of ginger, to be formed into a ball with fyrup or treacle.

Diuretic balls are prepared by Mr. R. Lawrence of ½ oz. of Venice turpentine, 2 drs. of tartarifed antimony, and 1 oz. of liquorice-powder, with treacle. By Mr. White, they are made to confift of 4 oz. of Caftile foap, and powdered rofin and nitre, of each 2 oz., ½ oz. of oil of juniper, linfeed-powder, and fyrup *q. f.* This mafs for ftrong horfes is divided into 6 balls, but for weak ones into 8:—or, the fame balls may be prepared of 4 oz. of Caftile foap, 2 oz. of Venice turpentine, and powdered anifeeds, and treacle, *q. f.* fo as to form 6 balls:—or, balls from 1 to 1½ oz. are prepared, according to Mr. Ryding's directions, of yellow refin, Caftile foap, and Venice turpentine, of each 1 lb. diffolved flowly over the fire and formed into a mafs. Thefe balls, he fays, are excellent diuretics, and may be given in gripes, fwelled legs, greafe, or in difeafes of the eye, &c.

Cordial balls are prepared by the fame of 2 oz. of grains of paradife, finely powdered, ginger and canella alba, of each ½ oz., anifeeds and caraway-feeds, of each 1½ oz., 2 oz. of liquorice-powder, and honey *q. f.*; to be given occafionally. By Mr. White, thefe balls are prepared by making a mafs with treacle of cummin-feeds, anifeeds, caraway-feeds, of each 4 oz., and 2 oz. of ginger; and they are given in the quantity of about 2 oz.:—or, they may be made of anifeeds, caraway-feeds, moift fennel-feeds, or liquorice-powder, of each 4 oz., ginger and caffia, of each 1½ oz., made into a mafs with honey, and given in a dofe of about 2 oz.

Aftringent balls are prepared by Mr. Taplin's directions of 6 drs. of diafcordium, gum arabic, prepared chalk, and Armenian bole, of each ½ oz., 1 dr. of ginger, 40 drops of oil of anifeed, with fyrup *q. f.*; they are given in cafes of laxnefs or fcouring, and repeated every 6, 8, or 12 hours, as the cafe may require. For this purpofe balls may be prepared of rhubarb, and compound powder of gum tragacanth, of each ½ oz., columbo and ginger, of each 1 dr., 15 grs. of opium, 6 drs. of orange-peel, and fyrup of poppies; the ball to be repeated in 12, 18, or 24 hours:—or, 1 oz. of mithridate, Armenian bole, gum arabic, and prepared chalk, of each ½ oz., 2 drs. of ginger, and fyrup of poppies, may form a ball.

Reftorative ball is formed, according to Mr. Ryding, of ½ lb. of Peruvian bark, 2 oz. of grains of paradife, gentian, and columbo, of each 3 oz., and honey *q. f.*; the mafs is to be divided into 16 balls, and one to be given every morning in cafes of indigeftion or lofs of appetite. Mr. Taplin directs a ball for this purpofe to be made of 4 oz. of Peruvian bark, 2 oz. of mithridate (or diafcordium), canella alba, fnake-root, and camomile, of each, in powder, 1 oz., or formed into a mafs with honey *q. f.*, and divided into 6 balls, one to be given night and morning:—or, ½ oz. of Venice treacle, 6 drs. of Peruvian bark, columbo, and camomile, of each 2 drs., 25 drops of oil of caraway, and honey *q. f.*

Diaphoretic balls are formed, according to Mr. White's directions, of 1 dr. of opium, 2 drs. of camphor, 3 drs. of tartarifed antimony, ½ oz. of powdered anifeeds, and fyrup *q. f.*

PHASIS, l. 9, infert—it is at the town of Serpana that it becomes navigable, and after collecting the ftreams of the plain of Mingrelia, it enters the Black fea. It purfues a courfe of 500 miles, 40 of which are navigable for large veffels. At its difcharge into the fea, it has a fmall woody ifland in the midft of the channel.

PHASMA, in *Entomology*, a genus of infects formed from fome of the Linnæan Mantes, and differing from that genus in having all the legs equally formed for walking, and without the falciform joint that diftinguifhes the fore-legs in mantes. The characters are, head large, antennæ filiform, eyes fmall, rounded; ftemmata three, between the eyes; wings four, membranaceous; the upper pair abbreviated, the lower pleated; and feet formed for walking. They feed entirely on vegetable food. The moft remarkable is the P. gigas or M. gigas of Linnæus. It is a native of the ifland of Amboina. Another extraordinary fpecies is the P. dilatatum, defcribed in the 4th volume of the Tranfactions of the Linnæan Society. Some infects of this genus, as well as thofe of the mantis, have their upper wings refembling the leaves of trees; nature having thus provided for their fecurity againft the attacks of birds, and as well as for the more ready attainment of their prey. The female of the P. fucifolium has no under wings.

PHILADELPHIA, l. 6, *r.* 19; l. 7, *r.* contained, in 1810, 57,488 inhabitants. Add—Alfo, the metropolis of Pennfylvania, and now a diftinct county, containing 14 wards, and, by the cenfus of 1810, 53,722 inhabitants.

PHILADELPHIA *Stones*, l. 3, after city, add—in Afia.

PHILIPSBURG, a town of York county, in Maine, with 1427 inhabitants.

PHILOSOPHER's STONE, l. 23 from the end, *r.* should not encourage.

PHLOGISTON, l. 19, *r.* now said to be separated.

PHOCA, l. 4, *r.* six (or four, Shaw.)

PHOSPHATE *of Copper*, in *Mineralogy*. See MINERALOGY, *Addenda*.

PHOSPHORITE. See MINERALOGY, *Addenda*.

PHOSPHORUS, *Phosphoric Acid*, *Phosphates*, &c. in *Chemistry*. According to the most recent determination of Dr. Thomson, the weight of the atom of phosphorus is 15, that of phosphorous acid 25, and that of phosphoric acid 35. A good deal of doubt, however, still hangs over this principle and its compounds. The *hypophosphorous acid*, discovered by Dulong, and which is formed when phosphuret of barytes is dissolved in water, appears to contain less oxygen than either the phosphorous or phosphoric acid, and was formerly considered as the *protoxyd* or first compound of phosphorus and oxygen. Dr. T., however, is latterly disposed to consider the *hypophosphorous acid* as a compound of 2 atoms phosphorus + 1 atom oxygen; but this is by no means ascertained. We may also observe, that all the best analyses of the phosphates shew that the weight of the atom of phosphoric acid lies between 40 and 45.

We may mention here, that Dulong has observed an acid formed during the slow combustion of phosphorus, composed, as he supposes, of 1 atom phosphorous acid + 1 atom phosphoric acid, and which he has named *phosphatic acid*.

PHRYGIA MINOR, l. 6, *r.* N.W.; l. 26, *r.* Alexandria-Troas. Col. 3, l. 8, *r.* Podarces.

PICÆ. At the close, add—See AVES, CLASSIFICATION, and NATURAL *History*.

PICROLITE. See MINERALOGY, *Addenda*.

PICROMEL, in *Chemistry*. See BILE.

PIGMENTS. Add—The results of sir Humphry Davy's late experiments on the colours used by the ancients as pigments are as follow. The red colours which they employed he found to be red-lead, vermilion, and iron ochre. The yellows were yellow ochre, in some cases mixed with chalk, in others with red-lead. The ancients likewise used orpiment and massicot as yellow paints. The blue was a pounded glass, composed of soda, silica, lime, and oxyd of copper. Indigo was likewise employed by the ancients, and they coloured blue glass with cobalt. The greens were compounds containing copper; sometimes the carbonate mixed with chalk; sometimes with blue glass. In some cases, they consisted of the green-earth of Verona. Verdigris was likewise used by the ancients. The purple colour found in the baths of Titus, was an animal or vegetable matter combined with alumina. The blacks were charcoal; the browns ochres; the whites chalk or clay. White-lead was likewise known to the ancient painters.

PILKINGTON, l. 1, after Lancashire, add—in the hundred of Salford, and parish of Prestwick, containing 7353 persons, occupying 1196 houses, of whom 1223 are employed in trade and manufactures, and 166 in agriculture.

PILLORY. This kind of punishment is now abolished in England.

PITCH-STONE. See MINERALOGY, *Addenda*.

PITT, in America, l. 2, add—of whom 3589 were slaves in 1810.

PITTSTOWN. Add, at the close—containing 694 persons.

PITTSYLVANIA, l. 2, add—of whom 6312 were slaves.

PLANE-TREE, for PLANTANUS *r.* PLATANUS.

PLANET, col. 20, l. 6 from bottom, for 365 days, hours and minutes, *r.* 365 days.

PLANETARIUM, col. 20, l. 34 from bottom, for Jupiter's *r.* Saturn's. Col. 23, l. 15 from bottom, for 23° 32′ 59″ *r.* 23° 39′ 59″.

PLAQUEMINA, in *Geography*, a parish of the county of Orleans, in the territory of Orleans, containing 1549 persons. The soil of this parish is well adapted to the cultivation of the sugar-cane, and some of the largest sugar estates yet formed on the Mississippi are within its limits, so that sugar is its staple commodity. The important port of fort St. Philip is one of the defences of Louisiana.

PLASNIA. See MINERALOGY, *Addenda*.

PLATINUM, in *Chemistry*. Dr. Thomson concludes, from the best experiments that have been made on this metal and its compounds, that the weight of its atom is 226.25.

PLATYSTACUS, in *Ichthyology*, a genus of abdominal fishes, instituted by Dr. Bloch, and nearly allied to that of Silurus. Its generic characters are, that it has the habit of silurus, mouth beneath, bearded with cirri, body scaleless, depressed, tail long, compressed. Dr. Shaw enumerates and describes the following species, *viz. cotylephorus*, with six beards, and ventral acetabula, the *Silurus aspredo* of Linnæus, a native of the Indian seas and rivers: *lævus*, with eight beards and smooth abdomen, differing perhaps only in size from the former: *verrucosus*, or warted brown P. marked above by longitudinal warted lines, with short anal fin, similar to the last, but smaller and of a less elongated form; a native of the Indian seas: *anguillaris*, or eel-shaped brown P., with longitudinal white stripes, and the second dorsal, anal, and caudal fin united, form less broad in front than that of the preceding species, having eight instead of six beards; a native of the Indian seas.

PLEASANT, in *Geography*, l. 2, *r.* 1246. Add—Also, a township in Franklin county, having 159 inhabitants.

PLEASANT, *Mount*. Add—a township in Madison county, having 328 inhabitants.

PLUMSTEAD, l. 2, in Bucks county, having 1407 inhabitants.

PLUTONIUM, in *Chemistry*, a name given by Dr. Clarke to the supposed metallic basis of barytes. See BARYTES and BLOW-PIPE.

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POGONIUS, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak large, thick, ciliated at the base, with the upper mandible bidentate on both sides, nostrils covered with bristles, feet simple, with two toes before and two behind. Of this genus there are three species, all inhabitants of Africa; *viz. sulcirostris*, or groove-beaked, the blue-black P. with throat, neck, belly, and an obscure stripe on the wings, scarlet, sides yellowish, back with a white spot, quills dark-brown, upper mandible with one longitudinal, under with many transverse, grooves; inhabits about the coast of Barbary: *lævirostris*, or smooth-beaked black P., with throat, neck, breast, abdomen, and a stripe on the wings, scarlet, back with a white spot, crown of the head variegated with scarlet; beak smooth, not grooved; the bucca dubius B. of Latham: *vicilloti*, or brown P., whitish beneath, head, neck, throat, and spots on the breast, scarlet; interior wing-quills externally marginal with pale; beak smooth, not grooved. Shaw.

POINT,

POINT, in *Geography*, a townſhip of Northumberland county, in Pennſylvania, having 431 perſons.

POINTE COUPE'E, a county and pariſh of New Orleans, containing 4539 perſons.

POIRET. See THEOSOPHISTS.

POISON, col. 3, l. 15 from bottom, for verus *r.* berus.

POLAND, col. 9, l. 31, add—From a ſtatiſtical account of Poland, publiſhed at Warſaw, it appears, that this kingdom in its preſent ſtate contains 1291 ſquare miles, (of 15 to a degree,) 481 towns, 22,694 villages, and a population of 2,732,324 perſons, of whom 219,244 are Jews.

POLAND, in America, col. 2, l. 2, *r.* 850. Add—Alſo, a townſhip of the county of Trumbull, in Ohio, with 827 inhabitants.

POLARITY *of Light*. See LIGHT.

POLARIZATION, in *Optics*, a term which has been lately applied to that change which takes place in the direction of rays that paſs through certain cryſtals, and which derives this appellation from its analogy to magnetic phenomena. It was firſt ſuggeſted by the modifications of light diſcovered by M. Malus (ſee LIGHT), and has ſince been inveſtigated with equal ingenuity and diligence by Dr. Brewſter. For his numerous communications on this ſubject to the Royal Society, he was honoured with the Copleyan medal.

POLASKI, in *Geography*, a county of Georgia, containing 2091 inhabitants, of whom 528 were ſlaves in 1810.

POLE, l. 2, add—the fourth ſon of the counteſs of Saliſbury, who was cruelly and unjuſtly beheaded by Henry VIII., and whoſe father, the duke of Florence, was drowned in a butt of malmſey by his ſon.

POLOPHILUS, COUCAL, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak ſtrong, ſlightly incurvated, noſtrils ſtraight, elongated, feet ſimple, two toes pointing forward, the exterior being the largeſt, two toes turning backwards, the interior furniſhed with a very long claw. The Coucals, ſo firſt called by Vaillant, form a moſt beautiful tribe of birds. They reſide in woods, feed on inſects and fruits, and conſtruct their neſts in trees, and (contrary to the manners of cuckoos) bring up their young, from which circumſtance their generic name is derived. Shaw.

POLYPTERUS, in *Ichthyology*, a genus of the abdominal fiſhes; the character of which is, that the gill-membrane is ſingle-rayed, and the dorſal fins numerous. This fiſh conſtitutes a new and remarkable genus, and was firſt ſcientifically deſcribed by M. E. Geoffroy, who conſidered it as forming a connecting link between the oſſeous and the cartilaginous fiſhes. It ſeems moſt nearly allied to the genus Eſox. It is known to the Egyptians by the name of Bichir, among whom it is rare, and ſuppoſed in general to inhabit the depths of the Nile among the ſoft mud. Its fleſh is white and ſavoury, though it is hardly poſſible to open its ſkin with a knife; and therefore the fiſh is firſt boiled, and its ſkin drawn off whole. Its ſpecific name is "Niloticus," and it is characteriſed as the green P., with the abdomen ſpotted with black. Shaw.

PONT-VOLANT, *dele* the deſcription, and let the reference remain.

PORANTHERA, in *Botany*, from πορος, *a pore*, and ανθηρα, *an anther*.—Rudge Tr. of Linn. Soc. v. 10. 302.—Claſs and order, *Pentandria Trigynia*. Nat. Ord.......

Eſſ. Ch. Involucrum of eight leaves, many-flowered. Perianth none. Petals five. Anthers of four cells, each with a terminal orifice. Capſules? three, with numerous ſeeds.

1. P. *ericifolia*. Rudge as above, t. 22. f. 2.—Native of New South Wales. *Dr. White*. A very extraordinary little plant. *Stem* branched, round, leafy, four to ſix inches high. *Leaves* ſcattered, numerous, linear, glaucous. *Flowers* corymboſe, minute, white. The dried ſpecimens reſemble ſome ſmall kind of *Lepidium*.

PORCELAIN, col. 24, l. 31, *r.* in a melted ſtate.

PORCELAIN *Jaſper*. See MINERALOGY, *Addenda*.

PORCELIA, in *Botany*, ſo called by Ruiz and Pavon, in honour of Don Antonio Porcel, a Spaniard, whom they celebrate, in the higheſt terms, as a promoter of botanical purſuits. Our reaſons for adopting this name, in preference to any other, for the genus we are about to deſcribe, may be found under the article ASIMINA. That we preſume to conſider the *Aſimina* and *Porcelia* of De Candolle as one and the ſame genus, may require a ſtill further apology, and we ſhall preſently give it, as far as we are able.—"Ruiz et Pavon Fl. Peruv. v. 1. 144. Prodr. 84. t. 16. Dunal Anonac. 85." De Cand. Syſt. v. 1. 480. "Perſ. Syn. v. 2. 95." Purſh 383. (Aſimina; Adanſ. Fam. v. 2. 365. Dunal Anonac. 81. De Cand. Syſt. v. 1. 478. Orchidocarpum; Mich. Boreal.-Amer. v. 1. 329. Annonæ ſpec. Linn. Juſſ. Gen. Willd. Ait. &c.)—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juſſ. *Anonaceæ*, De Cand.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in three deep, equal, ovate, concave, permanent ſegments. *Cor.* Petals ſix, unequal, in two rows, ſeſſile, ovate-oblong, ſpreading, coriaceous; the three innermoſt either larger or ſmaller than the reſt. *Stam.* Filaments ſcarcely any; anthers very numerous, nearly ſeſſile on the convex receptacle, oblong, burſting at each ſide. *Piſt.* Germens from three to ſix, ovate-oblong, ſeſſile; ſtyles none; ſtigmas obtuſe. *Peric.* Berries as many as the germens, ſeſſile, crowded, ovate or nearly cylindrical, more or leſs ſucculent, of one cell. *Seeds* numerous, elliptic-oblong, ranged tranſverſely in a ſingle or double row, inſerted into the inner margin.

Eſſ. Ch. Calyx inferior, deeply three-cleft. Petals ſix, ovate-oblong, ſpreading, in a double row, unequal. Germens oblong. Stigmas ſeſſile, obtuſe. Berries ſeſſile, of one cell, with many ſeeds.

A ſhrubby or arboreſcent genus, with oblong, undivided, deciduous *leaves*, and axillary, nearly ſolitary *flowers*, either ſeſſile or ſtalked, in ſome inſtances expanded before the foliage. All the ſpecies are natives of the cooler parts of America. The able profeſſor De Candolle ſeparates *Aſimina* of Adanſon from *Porcelia* of the *Fl. Peruv.*, the latter having its three inner *petals* rather the largeſt, the fruit more cylindrical and coriaceous, the ſeeds in a double row. In *Aſimina* the three outer petals are much the largeſt, and the fruit more ovate. But the *ſeeds* are likewiſe in a double row in one ſpecies at leaſt of this genus, the *triloba*, as De Candolle, on the authority of Ehret, admits; and the comparative ſize of the inner and outer petals, different in different ſpecies of *Aſimina*, can hardly be much relied on, nor is this admitted by De Candolle among his moſt eſſential characters, p. 465. The more or leſs cylindrical or ovate form of the *fruit* will not, ſurely, be inſiſted on; nor can that of the original *Porcelia* differ eſſentially in ſubſtance from the others, being like them ſucculent and eatable.

1. P. *nitidifolia*. Shining-leaved Porcelia. "Fl. Peruv. v. 1. 144." De Cand. n. 1.—Leaves ovato-lanceolate, pointed, ſmooth on both ſides. Flower-ſtalks aggregate. Inner petals rather the largeſt.—Native of mountainous

tainous woods in Peru. A tall and very handsome *tree*, forty ells in height, with greyish, rugged, minutely dotted *branches*. *Leaves* alternate, on short stalks, oblong-lanceolate, rounded at the base, entire, veiny on both sides, shining above. *Stalks* axillary, several together, drooping, thickened upwards, each bearing one or more yellowish-white *flowers*, about an inch in diameter. *Berries* cylindrical, tumid, rather coriaceous, but juicy and eatable, each marked externally with a longitudinal seam. *Seeds* oblong-kidney-shaped, compressed, in two rows. The *leaves* afford a yellow dye.

2. P. *parviflora*. Small-flowered Porcelia. Pursh n. 2. (Asimina parviflora; De Cand. Syst. v. 1. 478. "Dunal Anonac. 82. t. 9." Orchidocarpum parviflorum; Mich. Boreal.-Amer. v. 1. 329.)—Leaves obovate-wedgeshaped, pointed, clothed with rusty down beneath, as well as the young branches. Flowers sessile. Outer petals longest, scarcely twice the length of the calyx.—In shady woods, near rivers and lakes, from Virginia to Georgia, flowering in April and May. A low *shrub*, sometimes not above two feet high when in full fruit. *Flowers* small, dark purple. *Pursh*. *Branches* smooth, slightly rugged; when young leafy, and covered with reddish pubescence. *Leaves* on very short stalks; acute at the base; ribbed and downy beneath; smooth and green above. *Flowers* nearly or quite sessile, coming before the leaves, from the axillary scars of last year's foliage. Their *stalks*, if any, as well as the outsides of the *calyx* and *corolla*, are clothed with reddish down. *Berries* two or three from each flower, aggregate, ovate, smooth, rather fleshy, "the size of a plum." *De Candolle*.

3. P. *triloba*. Three-lobed Porcelia. Pursh n. 1. (Asimina triloba; De Cand. Syst. v. 1. 479. "Dunal Anon. 83." Annona triloba; Linn. Sp. Pl. 758. Willd. Sp. Pl. v. 2. 1267. Ait. Hort. Kew. v. 3. 335. A. foliis lanceolatis, fructibus trifidis; Mill. Ic. v. 1. 23. t. 35. A. fructu lutescente lævi, scrotum arietis referente; Catesb. Carol. v. 2. t. 85. Trew Ehret 1. t. 5. Duham. Arb. v. 1. 56. t. 19, 20. Orchidocarpum arietinum; Mich. Boreal.-Amer. v. 1. 329.)—Leaves elliptic-oblong, pointed at each end, nearly smooth, as well as the young branches. Flowers stalked. Outer petals roundish-ovate, four times the length of the calyx.—On the overflowed banks of rivers, from Pennsylvania to Florida, flowering in March and April. A small tree. *Flowers* dark brown. *Fruit* large, eatable. *Pursh*. This species, introduced by the celebrated Peter Collinson, is still met with in several curious gardens, like those of Kew, Sion-house, &c. where it produces in the spring large inodorous *flowers*, an inch and a half broad, with wrinkled dark-brown *petals*, as represented by Miller. Catesby and Ehret make them of a pale yellowish-green. The *leaves*, which come forth as the flowers begin to fall, are five or six inches long, and an inch and a half or two inches broad, on short stalks. The *flower-stalks* are solitary and single-flowered, from one to two inches long, downy with purplish hairs. *Berries* ovate, yellow, two or three inches long, not perfected in England, eatable, though reported by some persons to have an unpleasant smell. *Seeds* eight or ten, large, brown, rugged, in a double row, as represented by Ehret. Miller's figure exhibits a single row only. One or two *berries* only appear to be perfected from each flower.

4. P. *pygmæa*. Dwarf Porcelia. Pursh n. 3. (Asimina pygmæa; De Cand. Syst. v. 1. 479. "Dunal Anonac. 84. t. 10." Orchidocarpum pygmæum; Mich. Boreal.-Amer. v. 1. 330. Annona pygmæa; Bartr. Trav. t. 1. Willd. Sp. Pl. v. 2. 1268.)—Leaves oblong-lanceolate, obtuse; wedge-shaped at the base; smooth, as well as the young branches. Outer petals largest, obovate-oblong, greatly exceeding the calyx.—In the sandy fields of Georgia and Florida. The whole shrub not above a foot high. *Flowers* the size of *Anona squamosa*. *Pursh*. This is smooth in every part, with very long *leaves*, and short, single-flowered, solitary, bracteated *flower-stalks*. *Flowers* white; their inner petals smallest, elliptical and obtuse. *De Candolle*. Pursh, by a faulty punctuation, makes the inner *petals* longest.

5. P. *grandiflora*. Large-flowered Porcelia. Pursh n. 4. (Asimina grandiflora; De Cand. Syst. v. 1. 480. "Dunal Anonac. 84. t. 11." Orchidocarpum grandiflorum; Mich. Boreal.-Amer. v. 1. 330. "Annona grandiflora; Bart. Trav. t. 2." A. obovata; Willd. Sp. Pl. v. 2. 1269.)—Leaves obovate-wedgeshaped, obtuse; clothed beneath with rusty down, as well as the young branches. Flowers sessile. Outer petals obovate, many times larger than the calyx.—In sandy shady woods, of Georgia and Florida, flowering in May. A small shrub. *Flowers* very large in proportion, white. *Pursh*. Older *branches* smooth, as well as the upper surface of the *leaves*. Inner *petals* linear-oblong. *Berries* smooth, oblong-obovate. *De Candolle*.

PORTER, in *Geography*, a small township of the district of Maine, in the county of Oxford, having 292 persons.

PORTLAND, New, a township of Maine, in the county of Somerset, having 421 inhabitants.

PORTSBOROUGH. In 1811, the parish of St. Cuthbert's contained 1958 houses, and 38,673 persons; *viz.* 16,873 males, and 21,800 females: 210 families being employed in agriculture, and 3342 in trade, manufactures, or handicraft.

PORTSMOUTH, col. 5, l. 20, for tons *r.* cwt.

POTASSIUM, Potash, in *Chemistry*. The most recent determinations make the weight of the atom of potassium to be 50, and that of potash of course to be 60. Potassium, when heated in oxygen gas, combines with a larger quantity of oxygen than exists in potash, and thus forms a compound which is, in fact, a *peroxyd* of potassium. This peroxyd is of a yellow colour; when put into water it effervesces, giving off oxygen gas. Phosphorus, sulphur, and carbon, are acidified when brought in contact with it. Hydrogen, when heated with it, is slowly and without combustion converted into water. It decomposes ammonia, converting it into water and azotic gas.

POTT, Percival, col. 2, l. 27, for 1726 *r.* 1736.

POTZDAM. Add—Potzdam contains (the military not included) 115,426 souls.

POULTICE, in *Farriery*, is compounded of various ingredients, according to the purposes of its application. Some of the most approved, founded in modern veterinary science, are the following:—The *common* poultice consists of $\frac{1}{4}$ peck of bran and water, *q. s.* boiled for ten minutes, and then thickened with linseed-meal, having the addition of 3 oz. of hog's-lard: or, $\frac{1}{2}$ peck of fine pollard, $2\frac{1}{2}$ lbs. of linseed-meal, and boiling water, *q. s.* adding 2 oz. of hog's-lard. *Fermenting* poultice is obtained by boiling a quantity of brewer's wort, and throwing into it as much oatmeal as will thicken it; adding, lastly, a tea-cupful of yeast: this is adapted to putrid ulcers, or mortified parts. *Saturnine* poultice is had by adding to the common poultice 3 drs. or $\frac{1}{2}$ oz. of extract of lead, and mixing them well together: or, 1 oz. of acetated ceruse, (sugar of lead,) 3 quarts of boiling water, with the addition of bran and linseed-meal, *q. s.* A *suppurative* poultice may be made by stirring a sufficient quantity of common turpentine into some

ſome of the common poultice. An *anodyne* poultice may be prepared in the ſame way, by adding a ſufficient quantity of tincture of opium.

POWATAN, l. 1, *r.* 8073 inhabitants, of whom 5091 were ſlaves in 1810.

POYANG, l. 2, add—According to a ſtatement in "Ellis's Journal of an Embaſſy to China," (vol. ii.), this lake is very inferior in extent to the Tung-ting-hoo, in Ho-quang, the one being 180 lees, and the other 800 acroſs; the lee being rather more than one-third of a mile.

POWDER-CHESTS, l. *penult.* for fixed *r.* fired.

PRAIRIE, or MEADOW, a term uſed in North-Weſt America, to denote a tract of land diveſted of timber. In travelling W. from the Alleghanies, ſuch tracts occur more frequently, and are of greater extent as we approach the Miſſiſſippi. When we proceed to the diſtance of 2 or 300 miles to the weſt of that river, the whole country is of this deſcription, which continues to the rocky mountains weſtward, and from the head waters of the Miſſiſſippi to the gulf of Mexico, an extent of territory which probably equals in area the whole empire of China.

PREBBLE, in *Geography*, a county of Ohio, containing 7 townſhips, and 8304 inhabitants.

PREHNITE. See MINERALOGY, *Addenda.*

PRICE. See POLITICAL *Economy.*

PRINCE EDWARD, l. 2, after inhabitants, add—of whom 6996 were ſlaves in 1810.

PRINCE *George*, l. 3, inſert—of whom 4486 were ſlaves in 1810.

PRINCE *George*, l. 5, inſert—of whom 9189 were ſlaves in 1810.

PRINCE *William*, l. 3, add—of whom 5220 were ſlaves in 1810.

PRINCESS ANNE, l. 4, inſert—of whom 3926 were ſlaves in 1810.

PRINTING, CALICO, is the art of imparting various colours to plain calicoes, in any form, or according to any pattern that may be deſired, by means of certain colourleſs mordants previouſly applied to the cloth. This art has ſometimes been denominated *topical* dyeing, and the various branches of it are calculated to aſtoniſh thoſe who may have the opportunity of witneſſing the different proceſſes, without being acquainted with the nature of chemical mordants, and their ſeveral uſes in the arts.

The art of calico-printing is of great antiquity. Homer ſpeaks of the variegated cloths of Sidon, as having a very ſplendid appearance; and Pliny deſcribes the Egyptians as accuſtomed to prepare parti-coloured linens, and obſerves that theſe colours were produced after a manner correſponding with our method of topical dyeing. He ſays the Egyptians began by painting or drawing on white cloths, (doubtleſs linen or cotton,) with certain drugs, which in themſelves poſſeſſed no colour, but had the property of attracting or abſorbing colouring matters. After which, theſe cloths were immerſed in a heated dyeing liquor; and though they were colourleſs before, and though this dyeing liquor was of one uniform colour, yet when the cloths were taken out of it ſoon after, they were found to be wonderfully tinged of *different* colours, according to the different natures of the ſeveral drugs, which had been applied to their different parts; and theſe colours, ſo wonderfully produced from a tincture of only *one* colour, could not afterwards be diſcharged by waſhing; and he conſiders it as admirable, that the dyeing liquor, which, if cloths of different colours had been put into it, would have confounded them all, ſhould thus produce, and permanently fix *ſeveral* colours, being itſelf only of one colour. Pliny, lib. xxxv. cap. 2.

This account contains ſo plain a deſcription of one of the branches of calico-printing, that no one who is converſant with the preſent practices can entertain any doubt but that the ancient Egyptians were acquainted with many of the principles of this very curious art. Our readers, who are deſirous of further inveſtigating this intereſting ſubject, will find abundant and ſatisfactory information by conſulting the following works: *viz.* Pliny's "Natural Hiſtory;" the 26th volume of "Recueil des Lettres Edifiantes, &c." Strabo, lib. xv.; Delaval's "Experimental Inquiry into the Cauſe of Change of Colours, in opaque and coloured Bodies;" Berthollet's "Elements of the Art of Dyeing," vol. i. p. 28; Beckman's "Hiſtory of Inventions," in 4 vols. 8vo.; Mr. Parkes's "Chemical Eſſays," vol. ii. p. 65, &c.; and Dr. Bancroft "On Permanent Colours." In the above works, abundant teſtimonies will be found to ſhew that printed calicoes were not unknown to the ancients; and we have good reaſon alſo to ſuppoſe that the colours which they imparted to their cloths poſſeſſed a conſiderable degree of permanency, as we know that iron and alum were both employed by them as mordants. It is likewiſe well known that ſeveral ancient nations were acquainted with ſoda, madder, tin, the juice of the *buccinum*, cochineal (or an inſect ſimilar to it), the celebrated Tyrian purple, and other materials, ſufficient in the whole to enable them to give a great variety of colours and tints to their ſeveral productions.

Our object, however, in this communication, is to give a ſuccinct account of the art of calico-printing as it is conducted at preſent, and we do not know that we can do better than to copy the greater part of the detail which has been given by Mr. Parkes in his "Eſſay on Calico-Printing," in the ſecond volume of his "Chemical Eſſays," and which he has very politely allowed us to make uſe of in any way we think proper.

From this eſſay it appears, that calico-printing, as an art, is but of modern date in this country, though it has been practiſed in India, and other parts of the Eaſt, from time immemorial. From various accounts it appears, that formerly in India the cotton cloths when brought from the weavers, partly bleached, were worn next to the ſkin by the dyer and by all his family, during the ſpace of eight or ten days, after which they underwent ſeveral macerations in water, with goat's dung, and were afterwards ſubmitted to frequent waſhings, and as frequent dryings in the rays of an intenſe ſun-ſhine. Afterwards they were ſoaked for ſome time in the mixture of the aſtringent fruit of the yellow *myrobalans*, and of curdled buffalo's milk. When thoroughly impregnated therewith, they were ſqueezed, dried by expoſure to the ſun, and then, by preſſure and friction, they were made ſmooth enough for being drawn upon by the pencil with the different mordants.

The firſt of theſe mordants was an iron liquor, made by diſſolving iron in a mixture of four palm-wine and of water in which rice had been boiled. This liquor was applied to the figures or ſpots intended to become black, and afterwards the aluminous mordant was applied, commonly by children, with the pencil, to the parts intended to be made red. The pieces were then expoſed to the hotteſt ſun-ſhine, that the parts to which the mordants had been applied might be dried as much as poſſible: and then they were thoroughly ſoaked in pits of water, to cleanſe them from the ſuperfluous mordants, as well as from the buffalo's milk, &c.: and laſtly, they were dyed in water, with certain roots anſwering nearly in their effects to thoſe of madder.

It was in this way the manufacture of printed cottons was conducted by the Indians in *former* times. The following is an account of the *modern* Indian practice, in one particular branch of their manufacture, which Mr. Parkes fays he procured from a gentleman who had fpent fome time in India, and who had taken pains to inquire into their manipulations.

This procefs relates to the method of printing the fine cotton chintz counterpanes, which the natives call *pallampoors*, and which are manufactured at Madras. Thefe are woven in one piece, from two to four yards fquare, and are printed, or rather painted, with various defigns, and in various colours. Their method is to draw a pattern firft on fheets of paper fewn together, of the fize of the intended pallampoor; and then to prick out the fame in the paper with a fharp inftrument. This done, the paper pattern is fmoothly fixed upon the cloth, which is previoufly damped, and a fmall muflin bag containing fome kind of black powder is rubbed over the whole, in order to pafs a part of the powder through the pin-holes, and completely mark out the pattern.

The pattern being thus fketched upon the cloth, the paper is removed; and when the outline of the various figures is drawn with a pencil, the piece is confidered to be ready for receiving the colours.

One colour is then laid on with a brufh made with a tough root of a particular kind of tree, or with the hufk of the cocoa-nut; and when this is dry, the piece of cotton is given to a woman to wear, or to ufe in the family, till it be very much dirtied; in order that it might neceffarily undergo a thorough wafhing, which is thought requifite to prove the goodnefs and permanency of the colour. Another colour is then laid on in the fame manner, and the piece is again fubmitted to the fame trial of wearing and wafhing. The Afiatics may not be aware of it; but doubtlefs the long expofure to the air in thefe cafes is the important point, as it is well known that the atmofphere is a prime agent in rendering many colours permanent, which, under a different treatment, would be heavy and fugitive. This is repeated for every colour that is employed;—and when any one of thefe colours is found to be deteriorated by this treatment, it is printed afrefh; and fo are all the reft, till the workman is fatisfied that all the colours are actually permanent.

This tedious procefs is adopted, however, only when the manufacturer means to warrant the article; but in all cafes, even in thofe pieces which will not bear wafhing, the colours are laid on by a brufh, as before mentioned.

Whether they are all fubftantive colours which are thus applied, or whether they ufe any fpecies of mordants in their faft work, we are unacquainted, as the artifts of India obferve great fecrecy, and are extremely jealous on this fubject.

Such are the facts which we have been able to collect refpecting the progrefs of calico-printing from the earlieft ages; and alfo of the prefent ftate of the art among the Afiatics. The more difficult part now remains, *viz.* to give a brief detail of the moft important proceffes of our own artifts. This, however, we fhall endeavour to do with the utmoft plainnefs, and fhall not fail to fuggeft any improvement that may have occurred to us during our inquiries refpecting this very interefting and varied branch of manufacture.

We have not been able to afcertain when calico-printing was introduced into this country, though there are various reafons for believing that it is an art, among us at leaft, but of modern date.

As the whole of this ingenious bufinefs, as it is now conducted, depends upon the proper application of a few compounds called *mordants*, it will be neceffary, in the firft place, to explain their nature and ufes. In doing this, one or two preliminary remarks will affift us.

The colouring fubftances chiefly employed in this art are divided into two claffes, *viz. fubftantive* and *adjective.* A *fubftantive* colour is one which is capable of itfelf of producing a permanent dye on wool or woollen cloth; fuch is the juice of the buccinum, ufed by the ancients for producing the imperial purple; fuch are alfo the woad and indigo employed by the moderns for producing a permanent blue; and we may add the metallic folutions, particularly thofe of iron, cobalt, gold, platina, and filver, which give various colours, according to the proceffes by which they are prepared.

It has been propofed to employ this valuable permanent colour for pencilling on fine muflins. In time of peace it might readily be procured in fufficient quantities, and would prove an important addition to the refources of the Britifh calico-printer.

Dr. Bancroft tells us, that the firft mention of indigo, as known in England, is in the Act of the 23d of queen Elizabeth, chap. 9, where it is called *Ancle*, or *Blue Inde.* Bancroft on Permanent Colours, p. 138.

By *adjective* colours are meant all thofe which are incapable of giving permanent dyes without the aid of certain intermedia, which form as it were a bond of union between them and the fubftances intended to be dyed.

Thefe intermedia are what are known by the term *mordants*, and are ufed for this purpofe in very confiderable quantities by the calico-printer of the prefent day.

Several expedients of this kind were employed by the ancients to produce faft, or, more properly, permanent colours, and this appears from the teftimony of Ariftotle and Pliny. The chief articles in ufe at prefent are, the acetate of iron, the acetate of alumine, and the various folutions of tin, all of which fhould be very carefully and correctly prepared.

We have already given fome account of chemical mordants in vol. xxiv. part 1, under the article MORDANTS; which fee.

When piece-goods are defigned to be dyed of one uniform adjective colour, they are firft immerfed in a folution of one of thefe mordants, then hung up to dry, and to abforb the oxygen of the atmofphere. When fufficiently expofed to the air, they are wafhed or dunged, to remove the fuperfluous mordant; that is to fay, that part of it which is not chemically combined with the cloth; and the goods are then fubmitted to a bath of that particular kind of colouring matter which is to be imparted to them.

The dung of the cow is ufed in fuch large quantities by the calico-printer, that it has become an article of great expence. The proportion that is employed is ufually about one bufhel to one hundred gallons of water, though frequently a larger proportion would be more effectual. The brightnefs of the colours, and the purity of the whites, are always dependent upon the quantity of the dung employed.

Whenever it is meant that the colour fhould be partially inferted, the mordant is applied to thofe particular parts only; fo that, when the piece is immerfed in the colouring bath, no other place will receive the permanent ftain. If a fufficient number of colouring fubftances fhould ever be difcovered, that have no affinity for any thing but the chemical mordants, the bufinefs of calico-printing would be rendered much more eafy and fimple than it is at prefent. For though the whole texture of the cloth will be coloured,

yet

yet having in itſelf no affinity with the vegetable with which the decoction is impregnated, the whole of the colouring matter will be eaſily removed by expoſure to the air, and the ground of the piece reſtored to its original whiteneſs; while thoſe parts to which the mordant was applied, will retain and fix the colours in a way which will be more fully explained hereafter.

Formerly all calico-printers were bleachers; but in the neighbourhood of London theſe are ſeparate and diſtinct trades, and the printer either purchaſes bleached goods for printing on his own private account, or receives the cloth from his cuſtomers in a white ſtate; and, when printed, he returns the identical pieces, and is paid ſo much *per* yard, according to the number of colours, for printing them.

In our opinion every printer ſhould bleach his own goods, for it is impoſſible always to rely with confidence on the care of thoſe who bleach for hire; and every printer knows that good bleaching is abſolutely a neceſſary preliminary in the production of good printing. Indeed, this is now pretty generally acknowledged in the north of England; for moſt of the opulent houſes in Lancaſhire and in Scotland, which produce fine work, are bleachers as well as printers.

Oxymuriate of lime is the agent generally employed in bleaching; but it appears to us that ſome other article might be introduced with advantage. For, as the goods are waſhed in diluted ſulphuric acid when they are taken from the oxymuriate of lime, a ſulphate of lime is always formed, which becomes fixed in the fabric, and, acting as a mordant when the pieces come into the madder-copper, occaſions an indelible ſtain, which in very fine goods often impairs their beauty. If oxymuriate of ſoda were employed, the ſulphuric acid would form a ſoluble ſalt with the ſoda, eaſily removable by waſhing.

No people have taken more pains to excel in bleaching than the Iriſh, and their credit is eſtabliſhed accordingly. The German linen, we believe, is generally better than theirs; but the Iriſh has always the preference in foreign markets, owing to their ſuperiority in bleaching and finiſhing.

A very minute account of the various proceſſes in bleaching has been already given in our 4th vol. part ii. under the article Bleaching; which ſee.

By whatever means the bleaching is performed, the printer commences his part of the buſineſs in the following manner.

The goods are firſt *dreſſed* by ſingeing off the whole of the nap which is attached to them. This is effected by the following contrivance:—Ten pieces are generally wired together, and wound upon a roller, from whence they are paſſed over a hot iron, nearly in the form of half a cylinder, and received upon another roller; from thence they are returned to the iron, which is ſtill kept red, or nearly at a white heat. The uſe of repeating this proceſs is to remove the nap more effectually than it would be done by paſſing it only once over.

The next operation is that of *ſteeping*, which conſiſts merely in ſoaking the pieces for twenty-four hours in a veſſel of weak alkaline ley, at a temperature of about 100°. Theſe operations of ſingeing and ſteeping are going on at one and the ſame time, which effectually prevent any accident that might otherwiſe ariſe from the effects of the hot iron.

The goods are then boiled or elſe bowked in a ſolution of potaſh (ſome workmen prefer to have this alkali in a pure cauſtic ſtate); they are then well cleanſed by thorough waſhing in waſh-wheels, or in ſtocks, to enſure their being entirely diveſted of the alkali. The intention of thus treating them with potaſh, is to remove any greaſe or impurity that may be attached to them, which would otherwiſe endanger the evenneſs and uniformity of the colours. This proceſs is called *aſhing*.

By ſome obſervant calico-printers it has been imagined, that the rendering of the ley cauſtic is apt to impair the texture of the cloth; and we doubt not but that this has often been the caſe. Under the eye of the maſter, however, we are ſure that it might be employed with advantage and ſafety.

It may be remarked, that in weaving calicoes the workman generally greaſes the reeds, in order to make them move eaſier. Tallow is alſo employed for dreſſing the warp, and this has a baneful effect on all goods which are deſigned for printing. Wherever this greaſe is in the cloth, it becomes fixed by the operation of ſingeing; and if it be not taken out before bleaching, it will not come out afterwards by the uſual proceſs of aſhing and ſouring; for, when the pieces are ſubmitted to a blue vat to be dyed of a uniform ſelf-colour, all thoſe greaſy places will be found to have taken the dye in a very imperfect manner. If the calico-manufacturers themſelves would make a point of preparing the oleaginous matter for the weavers, and would furniſh them with nothing but pure vegetable oils, ſuch as thoſe of rape, linſeed, &c., it is very likely that theſe inconveniences would not occur; for the ſtain from *vegetable* is not ſo indelible as that from *animal* oil. To cleanſe ſuch goods, various expedients have been adopted, but we apprehend nothing but a ſolution of cauſtic alkali can be depended upon. To prove the effect of any method which may be tried, it is a good way to run the pieces through water, and then to paſs them from the water ſo gradually over a roller, as to give the ſuperintendant an opportunity of examining every inch of the ſurface; and if any part remains greaſy, it will be ſeen at once, for that part will continue dry, while all the reſt of the cloth is wet.

There is another way in which the goodneſs of bleaching might be proved. Let a few of the ſuſpected pieces be run once or twice through a madder-copper, at the temperature of about 180°. This will inevitably mark any part that may be imperfectly bleached; whereas, if the operation has been properly performed, they will come out ſo little ſtained, that an intelligent workman, who has been uſed to a madder-copper, will at once be ſatisfied that they contain no impurity that can form a permanent mordant.

The next proceſs is one with diluted ſulphuric acid. A quantity of ſoft water having been poured into a leaden veſſel, oil of vitriol is gradually added to it, in the proportion of about twenty pounds of oil of vitriol to every hundred gallons of water, which by weight is in the proportion of about one to forty.

When this mixture has been well ſtirred, it is ready for uſe. Sometimes it is employed in this ſtate, at others it is heated to 90° or upwards of Fahrenheit, according to the nature of the work to be done, and the goods are immerſed in it. They are not ſuffered to lie in this ſolution, but are wound by means of a winch over a wooden cylinder, that every part of the cloth may be immerſed in the fluid, and expoſed alternately to the action of the atmoſphere.

This operation is generally continued for about twenty minutes, and is deſigned to remove any iron-moulds or other ſtains which the cloth may have acquired. It has alſo the effect of neutralizing any portion of potaſh that may have been left in contact with the cloth. The proceſs is called *ſouring*.

After this operation it is neceſſary to waſh the goods thoroughly, that no part of the acid may be left in them to injure their texture, and this is beſt effected by means of the

the wafh-wheel. The calicoes are then to be regularly and thoroughly dried, which finifhes thefe preliminary operations, known in the trade by the term *preparation;* fo that thofe cloths which have paffed through thefe manipulations are faid to have undergone a preparation. Befides the ufes already mentioned, there is another advantage attending thefe proceffes, *viz.* that the cloth which has undergone this preparation will bleach fooner, the colours will be brighter, and the whites more delicate, than they would have been had they not gone through thefe previous operations.

The next procefs is that of *calendering*. Here the goods are paffed through a fet of rollers, which gives them a glofs, and the appearance of their having been ironed. They are now fit for printing. For copper-plate printing, or cylinder work, the procefs of calendering is omitted.

In printing faft colours, the artift ufually proceeds in this way: he lays the piece of calico, which has been already fmoothed by calendering, upon a ftrong thick table, which is previoufly covered with a woollen cloth. He then proceeds to apply one or more mordants, as the cafe may require, for fixing the intended colours. Thefe mordants are applied by means of wooden blocks, with the patterns formed upon them. Thefe blocks were formerly chofen of holly, and the cutting them was a feparate branch of the bufinefs, and was called *block-cutting*. Of late years, however, a confiderable improvement has been made in this part of the bufinefs by the introduction of brafs or copper; that is, the pattern, inftead of being actually cut in the wood, is now formed by means of flender pieces of one of thofe metals being firmly fixed to the block, fo as to produce the pattern intended. This alteration was occafioned by the perifhable nature of wood, on account of which every printer incurred great and unneceffary expence. The pattern when thus formed with copper, is not only more lafting, but it has alfo the advantage of giving greater fharpnefs and beauty to the impreffion. When it was cuftomary to ufe wooden blocks, the patterns were not enchafed in the wood, but the wood was cut away in fuch a manner as to leave the pattern in relief. It will be obvious that this muft always be the cafe in *block*-printing.

When the mordant is ready, it is mixed up either with flour-pafte, or with a thick aqueous folution of gum arabic, gum fenegal, or gum tragacanth, and is then fpread upon a piece of fuperfine woollen cloth, ftrained tight upon a hoop. This is placed within another hoop, covered either with fheep-fkin or oil-cloth. Thefe hoops are both fo broad as to give to each of them the appearance of a tambarine. That which is covered with the woollen cloth is called a *fieve*, the other a *cafe*. The fieve within its cafe is now placed in a fmall tub of gum-water, and is ready for ufe.

Flour is an article of confiderable confumption with the printers for making pafte. Some houfes buy twenty barrels of American flour at once. Should it be mufty or four from keeping, it is of little confequence for their ufe; but they are careful to buy none but fuch as has been made with found wheat, for if unfound it will be of no value for their purpofes.

Gum tragacanth is much dearer than the other gums mentioned above; but notwithftanding this, it muft be had for fome ftyles of work, as no other will anfwer for any of thofe colours or mordants which are prepared with nitrous acid. A folution of gum fenegal would be coagulated in an inftant by any of thofe preparations. Of late years, an article called Britifh gum has alfo been much in ufe for the fame purpofe; fo much fo that the making of it has become a diftinct trade. It is merely common ftarch pulverized, and then calcined till it affumes a cinnamon-brown colour.

When the apparatus is thus prepared, the mordant is applied by a brufh to the furface of the fieve. This is called *teering*.

It fhould have been remarked, that when a colourlefs mordant, like the acetate of alumine, is employed, the workman generally mixes a little of the decoction of Brazil wood, or of any other fugitive dye, with it. This is called *fightening;* and is for the purpofe of making the pattern more obvious to the workman, that he may fee its progrefs, and the efficacy of the materials, as he proceeds in printing. The manipulation may be thus defcribed.

Taking the block containing the pattern in one hand, the workman applies it gently to the furface of the fieve, fo that a fufficient quantity of the thickened mordant may adhere to the figures. When the block is thus charged, he applies it to the calico, and gives it a blow with a fmall mallet, either flightly or otherwife, according to the nature of the pattern.

This alternate application of the block to the fieve and to the calico, is continued till the workman has gone over the whole piece. In this way, feveral different mordants are fometimes applied to the fame piece of goods. This is indeed always neceffary, when the finifhed piece is intended to contain a variety of colours, the different colours requiring different mordants to fix them and render them permanent.

The calico is now removed to a room called the ftove, where a certain degree of heat is given to it by means of flues, which go round the room on the infide, near the floor. In this room, it is generally continued for at leaft twenty-four hours. This is when common red-liquor has alone been printed; but if citric acid or ftrong muriate of tin has been employed, lefs time is fufficient, and for the latter feldom more than half an hour is allowed. The intention of this is to evaporate the acids ufed in the preparation of the mordants, and which might otherwife injure the texture, and alfo to fix the bafe more furely within the fibres of the cloth.

In this operation, an attention to temperature is of the utmoft importance. In general the room is kept at about 90°; but an intelligent calico-printer varies this according to the nature of the work under operation. If iron-liquor has been employed in printing the goods, it is an excellent practice to keep them for feveral days expofed to the atmofphere, after their removal from the ftove, as the blacks, pompadours, olives, and indeed every other colour prepared with that metal, will increafe in intenfity; the goods will clean better in the dung-veffels, as will be explained hereafter, and the colours will rife higher and brighter when they come into the copper of bark or madder. The iron in an acetous folution is in the ftate of the *black* oxyd; but by expofure to the air it acquires a further dofe of oxygen, and the more nearly it is made to approach to the ftate of the *red* or peroxyd, the more fit it becomes for a mordant in dyeing. It may be worth an experiment to difcover whether the colours containing iron would not be better if they were fuffered to be only a *very fhort time* in the ftove, but were hung up inftead for feveral days, expofed to a current of air at the temperature of the atmofphere; as the iron would thus acquire the oxygen flower, and confequently would be fixed more firmly within the cloth.

When the pieces have been properly ftoved, they are paffed, by means of a winch, through water at various temperatures, with a little cow-dung mixed in it. This part

part of the bufinefs was formerly conducted in a very uncleanly and negligent way; but of late years fome printers have incurred a confiderable expence in the conftruction of their dunging machines, with cocks for hot and cold water attached to them, and thermometers to regulate the temperature. Thofe erected by Mr. Wright, a very ingenious calico-printer, at Strines, near Difley, are the moft complete of any we have yet feen.

The intention of the dung is to abforb and remove that portion of the mordant which is not actually combined with the cloth, and which otherwife might ftain the white or unprinted parts.

We fufpect the dung of the cow is ferviceable in another way befides that of cleanfing, though the printer may not be aware of the nature of its operation. To *clean* calicoes by immerfion in a dung-veffel, may appear to be a ftrange phrafe; but as this is the technical language of the trade, no other could be employed with propriety. It is acknowledged that madder, cochineal, and fome other dyes, produce much better colours on woollen than on cotton cloths, owing to the former being of animal, and the latter of vegetable origin. We prefume, therefore, that the dung imparts an *animal* matter to the fibres of the cotton, and that this animal matter acts as an additional mordant, and thus more powerfully attracts the colouring particles of the dye, than the mordants alone would be capable of doing. Berthollet, who analyfed the dung of the cow, found in it a fubftance partaking of the nature of *bile*.

If a piece of calico, prepared with the acetate of alumine, be divided into two parts, and the fuperfluous mordant removed from one of them by cow-dung and water, and from the other by water only, though both fluids were at the fame temperature, it will be found, on paffing the two portions through a decoction of weld or quercitron bark, that the yellow will be much more intenfe and bright in that which had been fubmitted to the action of the cow-dung. This is a fatisfactory and decifive experiment.

The procefs of *dunging* is an operation that varies in time from five to forty minutes, according to the ftyle of work. The pieces are then taken to the river or wheel, to be more effectually wafhed; after this they are paffed through tepid water, in order that the workman may be affured that every impurity is removed.

His next care is to provide a copper boiler of pure cold water, in which a fufficient quantity of madder is put, and a fire lighted underneath it. The calicoes, printed and rinfed as above, are now put into this boiler, and from the time they are immerfed, the workman never ceafes to turn the winch, fo as to pafs every part of the goods repeatedly through the liquor, till the whole acquires a boiling heat. Indeed, this operation is fometimes continued for ten or fifteen minutes after the bath of madder actually boils, when the pieces are taken out and wafhed.

Madder is one of the moft valuable drugs we have, for a variety of purpofes in dyeing and calico-printing; as it is the agent by which the beft and moft permanent blacks are produced; alfo the fineft purples, and every fhade of red from a pale pink to a crimfon. But perhaps it may not be generally known that this article improves by age. If a quantity of madder-roots be ground, and then packed tight in a cafk, fo as to exclude the air, and are kept thus for fix months, they will then dye a much better colour, and go much further than they otherwife would have done, had thefe roots been ufed as foon as they were ground.

This procefs, which is called *maddering*, has the effect of imparting all the requifite colours to the goods, by means of *one* operation, which may be thus explained. While one mordant precipitates the colouring matter of the madder to a red, another precipitates a different portion of it to a purple, another precipitates it to a black colour, and fo of every poffible fhade, from a lilac to a black, and from a pink to a deep red.

If a portion of weld or bark be added to the madder, every fhade from a brown to an orange may be produced; whereas, if weld or bark alone be employed, all colours between a dark olive and a bright lemon can be imparted to the cloth. Thefe changes are all occafioned by the play of chemical affinities, and are due to the improved ftate of chemical knowledge.

Here it may be worth remarking, that whenever it is of confequence to produce the fineft yellows or more delicate lemon colour, it is neceffary to dry the pieces in the open air, as the ftove would not fail to injure fuch colours; for ftove-drying has always a tendency to convert a yellow to an orange. It is alfo neceffary to be equally careful in the operation of dunging the mordants for thefe pale yellows; for, fhould this be done at a higher temperature than 96° or 100°, their beauty will certainly be impaired. There is another advantage in this, *viz.* by dunging at this low temperature, the dyeing may be completed even at 110° or thereabouts, which will give a much livelier colour than where a higher temperature has been employed.

The mordants generally ufed in calico-printing are acetate of iron for browns, blacks, lilacs, &c. and acetate of alumine for all the different fhades of reds and yellows.

Formerly the acetate of iron was made by digefting old iron hoops in four beer, or in very weak vinegar; but of late years it has chiefly been made with the pyroligneous acid, [if wood be fubmitted to an intenfe heat, when inclofed in an iron veffel of any kind with a proper aperture to allow the vapour to pafs, this vapour on being condenfed forms the acid in queftion, and is now known to be a kind of impure *vinegar*. The wood in this cafe is converted into *charcoal*, of which a great deal is prepared by this procefs, particularly for the formation of gunpowder,] the oleaginous impurities of which tend, in fome cafes, to improve the mordant.

Blacks are alfo produced by the nitrate of iron [nitrate of iron was not applied to calico-printing till within the laft fifty years. This difcovery formed an important era in the trade, as it afforded the manufacturer the means of varying his ftyles of work in a multiplicity of ways and forms, which, till then, were entirely unknown,] and gallic acid; the mixture is called chemical black. This nitrate of iron is made by diffolving metallic iron in a peculiar kind of aqua-fortis. Common aqua-fortis will not anfwer for this purpofe; for, though it may diffolve the iron with rapidity, part of the metal is apt very foon to precipitate; which not only weakens the colour, but leaves the remainder fo acidulous, that there is always a danger of fuch a preparation injuring the texture of the cloth.

It is, however, neceffary to remark, that the black which is formed by this folution of iron, is produced in a different way from blacks in general; for, when common iron-liquor is ufed for this purpofe, it is firft printed on the calico: and when it has been fufficiently oxydized by expofure to the air, the goods are boiled in a decoction of madder, which renders fuch parts as had been printed with the acetate of iron an intenfe black. But the black from nitrate of iron and galls is applied at once to the cloth, and is not afterwards raifed by dyeing.

The calico-printer by ufing a black ready formed is thus enabled to mix it with other colours, in cafes where by dyeing alone it could not be produced, as in conjunction with yellows and olives, raifed by weld or quercitron bark.

The

The acetate of alumine is prepared by a mixture of the ſulphate of alumine with acetate of lead, both in a ſtate of ſolution; ſo that, on the theory of double decompoſition, ſulphate of lead is formed, which precipitates, while the acetate of alumine remains in ſolution.

Since the demand for this article has been increaſed on account of the extenſion of the printing trade, it has been prepared from the pyroligneous acid by means of lime and alum. The following is the method:

The pyroligneous acid is firſt paſſed through a ſtill, to diveſt it of a portion of the tar which is always diſſolved in it; it is then ſaturated with lime or whiting; and laſtly, the acetate of lime thus formed is decompoſed by a heated ſolution of ſulphate of alumine. The reſult of this double decompoſition is ſulphate of lime, which precipitates, and acetate of alumine, which is drawn from the ſediment of the calcareous ſulphate, and preſerved for uſe.

And here it may be neceſſary to caution the manufacturer againſt a misfortune that may befall him if he be not converſant with the chemical nature of the ſubſtances he employs.

Magneſian lime-ſtone abounds in Derbyſhire, and in ſome of the adjacent counties; and ſhould a maker of acetate of alumine employ ſuch lime in his proceſs, the article which it would produce would in all probability be entirely unfit for the uſe of the calico-printer. But we muſt be more explicit.

In employing the common lime in conjunction with alum, a ſulphate of lime will be formed, as mentioned above, and this being nearly an *inſoluble* ſalt, will precipitate. But here, ſulphate of magneſia would alſo be formed, which being a *ſoluble* ſalt, would remain in ſolution, and increaſe the ſpecific gravity of the liquor, a circumſtance which would be very apt to occaſion the deception which we are anxious ſhould be avoided. If magneſian lime-ſtone be employed, the liquor will appear good by the hydrometer; but, as it will contain more Epſom ſalt than acetate of alumine, it will be unfit for every purpoſe for which it was intended.

While ſpeaking of acetate of alumine, we cannot avoid remarking that the proceſs which has juſt been deſcribed for making this mordant, and which is followed invariably by many of the manufacturers in the North, is extremely improper, on account of the lime which is employed in it, be the lime ever ſo good, as that earth is very prejudicial to every ſpecies of red dye. The true way of making it, though more expenſive, is that which was originally pointed out by Berthollet, and which conſiſts in decompoſing ſulphate of alumine by means of ſaccharum ſaturni, or acetate of lead.

In reverting to the remaining proceſſes of the print-work, it muſt be noticed, that when the goods have paſſed through the weld or madder-copper, they are uſually carried to a boiler containing wheat-bran and water, in which they are winched for a conſiderable time, for the purpoſe of freeing the white grounds from the ſtain which they had acquired from the madder or the weld. This proceſs always impairs, in ſome meaſure, the intenſity of the colours; [branning has alſo the effect of giving a pink hue to all madder reds. But it is not *generally* known what a peculiar richneſs may be imparted to madder-colours, by raiſing them with a mixture of bran and madder; that is, by mixing a portion of bran with the madder in the firſt inſtance. Mr. Parkes tells us, that he has ſometimes produced colours in this way whoſe brilliancy has aſtoniſhed him. The operation of the bran in producing this effect will be explained hereafter;] but it is a neceſſary operation, as there is no other mode ſo convenient for removing the ſtain which is always given to the white part of a print by the madder, the bark, or the weld, which has been uſed in dyeing it.

It frequently is the caſe, however, that goods will not bear to be ſufficiently branned to clear the whites entirely by that one operation; [the temperature at which the operation of branning is performed, is very important. If bark yellows are dyed at 100°, it is cuſtomary to bran ſuch goods at 115° or 120°, as it is a principle always to bran at a higher temperature than the goods are dyed at. Madder-work muſt be branned at a boiling heat;] ſuch goods, therefore, are partially cleanſed in the branning-copper, and are then laid on the graſs for ſome days, till they become perfectly clean.

But within a few years a new method has been introduced, which conſiſts in immerſing the pieces for a certain time in a very weak ſolution of one of the bleaching ſalts, ſuch as oxymuriate of potaſh, ſoda, or magneſia. [A Scotch houſe of great conſequence had practiſed this method a conſiderable time; and in the year 1812, a perſon viſited Lancaſhire for the purpoſe of inſtructing the Engliſh printers in the method.] This ſimple proceſs, which effects in a few minutes what would require more than as many days in graſs-bleaching, is now much practiſed, and promiſes very ſoon to ſuperſede crofting entirely. This is a moſt important improvement, as ſome of the large printers formerly required as much land to ſpread out their goods upon, as would make a farm of a very conſiderable ſize.

Beſides the kinds of calico-printing already mentioned, there are others which it will be proper to notice in this place. Of theſe, what is called *reſiſt-work*, is now done in conſiderable quantities. It is conducted in the following manner:

A certain preparation of copper, mixed either with flour-paſte, with gum, or with pipe-clay and gum, is printed on the calico, in any ſhape or of any pattern that may be deſired. [The ſulphate, the nitrate, the muriate, and the acetate of copper, have all been employed for preparing the reſiſt-paſte; but the ſulphate is the beſt for the purpoſe; unleſs a very concentrated ſolution of the four ſalts were prepared by ſucceſſively diſſolving each of them in pure water.] When this is ſufficiently dry, the goods are repeatedly dipped in the blue vat till they have acquired that depth of tint which may be required; and then, when they are waſhed, and paſſed through diluted ſulphuric acid, thoſe parts which had been printed with the preparation of copper, are found to be a good white; the preparation having effectually reſiſted the operation of the indigo, [the art of making an indigo-vat conſiſts in forming ſuch a mixture of lime and ſulphate of iron as ſhall moſt effectually deoxydize the indigo; as indigo has no affinity for cloth in its natural or oxygenized ſtate. Hence, thoſe parts of a piece which are printed with a ſolution of copper will never be dyed blue in one of theſe vats; becauſe the deoxydized indigo becomes oxygenated the moment it touches the copper, which parts with its oxygen to the indigo, and occaſions it to become inſoluble, and conſequently incapable of forming a dye. Thus, while ſulphate of iron has the power of deoxydizing indigo, ſulphate of copper, or any other ſalt of that metal, is incapable of retaining its oxygen, whenever it comes in contact with that ſingular ſubſtance in a ſtate of deoxydizement; and it is a curious inſtance of the different degrees of intenſity by which oxygen is held by the different metals;] though all the other parts of the cloth have received a permanent dye. The various deep blue calicoes with white ſpots or white figures, which are now ſo common, are generally done in this way; and by a ſimilar management with ſubſequent dyeing in madder, weld, or bark,

bark, figures in red or yellow are exhibited upon a blue ground.

In ſome particular ſtyles of work, the operation of certain colours is reſiſted by means of ſtopping out with wax; but this is too expenſive a method to be adopted often in theſe times, when it is the object of every manufacturer to finiſh his prints at the leaſt poſſible expence. [In printing thoſe ſilk handkerchiefs called Bandanas, a proceſs called waxing is ſtill followed. It conſiſts in making a preparation of tallow and roſin very liquid by heat, and in printing it in that ſtate with a block upon the ſilk. When ſuch goods are paſſed through the blue vat, thoſe parts which are covered with the tallow and roſin are preſerved from the action of the indigo, and remain white, while all the reſt is dyed a faſt blue. The method afterwards taken to diſcharge a part of this blue, and produce yellow, orange, &c. will be mentioned hereafter.] Formerly this mode was very generally practiſed, and wax [in the Eaſt Indies wax is ſtill uſed for preſerving the whites in calico-printing] was conſumed in very large quantities by this proceſs. [A very ſingular-looking ſubſtance was diſcovered a few years ago near Stockport, which being handed about from one to another as an undeſcribed ſubſtance, created conſiderable intereſt in that neighbourhood. Every body ſuppoſing it to be a natural production, ſpecimens of it were ſent to a variety of perſons into various parts of the kingdom, for their opinion and analyſis, and among others a portion was ſent to Mr. Parkes. However, after every one had been buſily engaged in examination and conjecture reſpecting this unknown ſubſtance, it was announced, that ſome ſeventy or eighty years before a calico-work had ſtood on the ſpot where the article was found, and that this was nothing more than a large heap of of the refuſe compound of flour, wax, and gum, above-mentioned.]

The reader will perceive that theſe *reſiſts* are employed for the purpoſe of preſerving certain parts of a piece white, and of giving other varieties to thoſe goods in which blue is the predominant colour: but if the ground is to be white, and the piece is only to have one ſmall object [a technical term, belonging to this branch of manufacture] in indigo blue, ſuch as a ſingle ſprig, then a different management is neceſſary, and the colour is imparted by a proceſs which is called *pencil-blue.*

Here the indigo is deoxydized by means of orpiment, which is a ſulphuret of arſenic; and formerly, whatever objects were done with it were put in by means of a pencil: hence its name, *pencil-blue.* [Pencil-blue is compoſed of the following ingredients, *viz.* Ten ounces of indigo finely ground in water; twenty ounces of quick-lime in lumps; the ſame quantity of potaſh of commerce, or the impure ſub-carbonate of this alkali; and ten ounces of orpiment. Theſe proportions require one gallon of water, and the whole is to be thickened with gum ſenegal.] See Colour.

Another kind of proceſs remains to be noticed, called chemical diſcharge-work. Here the cloth is firſt dyed of ſome uniform colour, by means of a mixture of iron-liquor, and ſome one or more of the common vegetable dyeing ſubſtances; and calicoes thus prepared are ſaid to be dyed of ſelf-colours. They are then waſhed and dried; and when properly preſſed or calendered, they are fit for receiving any pattern whatever, according to the artiſt's taſte or deſign.

This is generally effected by means of the mineral acids, which are previouſly compoſed for the purpoſe, by diſſolving in them a portion of one or more of the metals, according to the nature of the dye which is intended to be diſcharged, or of the colour to be produced. In doing this, care is taken that the diſcharging liquor be made ſo as to be capable of diſſolving the iron which is contained in the dye, and which is always uſed in ſuch quantity as to cover, or at leaſt to diſguiſe in a great meaſure, the other colour or colours which had been employed with it, and at the ſame time to act as a mordant in beautifying and fixing thoſe colours.

Thus a piece treated with a decoction of Brazil-wood, and dyed black by being padded [by the term *padding* is underſtood the operation of paſſing the pieces from a roller through a trough containing a ſolution of iron, or any other mordant. *Blotching* is another term uſed in calico-printing, and is ſynonymous with padding] with iron-liquor, if, when dried, it be printed with a peculiar ſolution of tin, the ferruginous portion of the dye will be diſſolved, and the printed part will inſtantly be converted from a deep black to a brilliant crimſon.

In the ſame way an olive-coloured calico, dyed in a ſolution of iron and a decoction of weld, will as quickly be changed to a bright pale yellow; and the various drabs and ſlates of every ſhade which have iron in their compoſition, will undergo as ſudden a change by the ſame treatment; though the colour of the figures produced on them will depend on the materials with which the cloths were originally dyed. Even the deepeſt gold colours, or ſtrongeſt buffs, if produced by iron only, may, by a peculiar preparation of tin, be diſcharged; and ſuch parts of the cloth as have been treated with this metallic ſolution will be reſtored to their priſtine whiteneſs.

By ſimilar management, calicoes dyed of a light blue in the indigo-vat, then run through ſumach and copperas, and finiſhed in a bath of quercitron bark and alum, may have figures of a bright green imparted to them. Here the green is originally formed by means of the indigo-vat and the bark, though it is enveloped by the iron of the copperas, which overcomes the other colours, till the ſolution of tin is applied, which removes the iron from thoſe particular parts, and gives a brilliancy to the remaining colours which they would not otherwiſe have poſſeſſed; the tin being a powerful mordant for the bark, by which the yellow of the green is produced.

Again, a good ſelf-colour may be given to calicoes, merely by dyeing them in ſumach and copperas, and then running them through an alkaline ſolution of annotto; and here the figures produced by the application of a colourleſs ſolution of tin will be of a bright orange. But it is needleſs to enumerate more inſtances, as the workman accuſtomed to a dye-houſe will have little difficulty in varying theſe in a thouſand ways, when he becomes acquainted with the nature of the ſolution of tin which he employs.

The whole of this, however, refers to that branch of diſcharge-work only, where all the purpoſes are attained by diſſolving the iron which makes a part of the colour that is intended to be diſcharged; whereas, the finer and more expenſive work is done in a different way, and by a proceſs which it will be neceſſary for us preſently to deſcribe.

In the mean time it may be proper to remark, that there is an objection to the particular kind of chemical diſcharge-work of which we have been ſpeaking, namely, that it is not perfectly faſt; that is, the goods produced in this way will not bear ſuch frequent waſhing, as thoſe which are done by the bath of madder or bark.

It is certainly an object of great national importance to give a permanency to the calico-printing of the country; [to this end great improvements have lately been made in the method of grinding madder-roots, by ſeparating the inferior parts, and dividing the whole into two or three different qualities. Thus the printer is enabled to apply the fineſt, which in this way is made equal to Dutch crop-madder,

madder, to his beſt work, and the other is laid by for inferior purpoſes;] and a great deal of very excellent printing is now done in various parts of the kingdom, eſpecially the beſt chintz-work and other furniture patterns. But, in what is called faſt-work, there is a great variety of qualities, and ſome of it little deſerves the name of permanent.

The mention of permanent colours reminds us of a very valuable green which was invented a few years ago by a Mr. Iſlet of London, and which deſerves to be noticed by us. This colour, which was ſecured to him by his majeſty's letters patent, was produced by printing ground indigo, mixed with a peculiar kind of ſolution of tin, and in then faſtening the indigo within the fibres of the calico by means of that proceſs, which is well known to printers by the technical deſignation of *china-blue dipping*. [China-blue is produced thus: Indigo ground fine, and then thickened, is printed upon the cloth, and afterwards it is diſſolved, and chemically united to the fabric, by alternate immerſion in a ſolution of ſulphate of iron and in lime-water. A deſcription of this proceſs has already been given very much in detail, in our eleventh volume, part ii. under the article Dipping, in *Calico-Printing*.] After this the goods are to be dyed in a copper of bark or weld, which converts the blue to a green, and the whites are to be cleanſed by croft-bleaching, &c.

Upon this very ingenious proceſs, Mr. Parkes has the following obſervation. "Having," ſays he, "formed a very high opinion of this invention, I procured ſeveral interviews with Mr. Iſlet, ſoon after he obtained the patent, and from him was fully informed of the whole proceſs. — This I have ſince repeated for the purpoſe of verifying the detail in all its branches; and I am ſatisfied that it is one of the moſt beautiful and permanent colours that has ever been fixed upon cotton."

There is, however, another mode of producing very beautiful blues which has been much practiſed lately, and therefore deſerves notice. This conſiſts in printing ſome ſolution of iron, and then paſſing the goods through a very dilute and neutral ſolution of pruſſiate of potaſh. The pruſſian blue which is thus formed upon the cloth may be rendered tolerably permanent by a variety of expedients, and this by means of any of the yellow dyes may afterwards be formed to any ſhade of green or of olive.

In returning from theſe digreſſions we muſt not forget to revert to that other kind of diſcharge-work which we have engaged to deſcribe, and which we will now attempt as conciſely as is conſiſtent with perſpicuity and correctneſs.

Here, the agent which is employed is the citric acid, and this is uſed in various ſtates of concentration according to the purpoſe to which it is to be applied, and the ſtrength of the ground intended to be diſcharged. It is chiefly employed for the production of white figures upon ſelf-coloured grounds produced by madder and ſundry other dyes. For this intention the acid, in whatever ſtate of concentration it may be, is mixed with either gum or with paſte, [when citric acid is uſed for reſiſt-work, it is always mixed with gum ſenegal and pipe-clay. The clay gives it a greater body, and likewiſe acts mechanically as a reſiſter,] to a proper conſiſtency for the block, the plate, or the cylinder, and from thence it is transferred to the piece; and wherever it attaches, the mordant, whether iron or alumine, is diſcharged, and a delicate white ariſes in its ſtead. [It ſhould be underſtood, that the diſcharge is printed upon the mordants before the goods are dyed. In uſing citric acid for this purpoſe, a portion of one of the mineral acids is ſometimes mixed with it.]

The acid here referred to is produced from the juice of limes or lemons, and formerly it was not employed by the calico-printer until it was reduced to the utmoſt point of concentration, and appeared in a cryſtalline form. Even then, it was not thought ſufficiently pure, but was diſſolved again, and rediſſolved and recryſtallized, till it became as white and pellucid as any other pure ſalt in a cryſtallized ſtate, and was then generally ſold for 36*s.* the pound, at which high price it could only be employed on the beſt ſtyles of work. Now, however, it is oftener uſed in the brown, or firſt ſtate of cryſtallization; and ſome of the larger printers purchaſe lime juice, and concentrate it themſelves; and in many caſes, they uſe it largely both for diſcharge and reſiſt work, without ever cryſtallizing it at all. More on this ſubject may be ſeen in Mr. Parkes's Eſſay on Citric Acid, in vol. iii. of the Chemical Eſſay, page 1—118.

This mention of diſcharge-work by citric acid, [Mr. Thomſon, who has a print-work near Clitheroe, has taken out a patent for diſcharging the Turkey-red dye by means of the citric and oxymuriatic acids; and the work executed in this way has a very pleaſing effect,] reminds us of another ſpecies of diſcharge, which is employed by the printers of Bandana handkerchiefs, and which we are under the promiſe of noticing before we conclude this memoir.

The agent which theſe printers employ is the nitrous, and ſometimes the nitro-muriatic acid. It is uſed for the purpoſe of putting yellow figures upon blue ſilk handkerchiefs. The following is the proceſs which is principally adopted.

Aqua-fortis, or nitro-muriatic acid, of ſuch a ſtrength as is ſuitable for the kind of blue which is intended to be diſcharged, is mixed either with gum tragacanth, or with flour paſte, to a proper conſiſtence, and in this form it is printed on the ſilk, by means of a common block, on which the intended pattern is cut. The conſequence of this is, that wherever the acid attaches, there the original colour is diſcharged, and a yellow dye is produced in its place. The pieces are then ſteamed, by paſſing them over a veſſel containing boiling water, which gives brilliancy to the colour and finiſhes the operation.

If a ſtronger dye than the uſual yellow, or even a deep orange be deſired, all that is neceſſary is to immerſe the goods, for a moment, in lime-water, or in a ſolution of lime and potaſh; and by varying the proportions of theſe ingredients a great variety of ſhades may be produced.

Recollecting, however, that this is a paper profeſſedly on calico-printing, we muſt not deviate too far from the path we have preſcribed; otherwiſe, there are many proceſſes in the printing of ſilks which are curious and intereſting, on which we might copiouſly expatiate. The Bandana handkerchiefs which are printed upon cotton in imitation of India goods, are produced by a very different proceſs, and which we have already deſcribed under the article Discharging *of Colour*, in vol. xi. part ii.

Having been ſpeaking of yellows, it may be worth mentioning, that there is a mode of producing yellows on calico which is not very frequently practiſed, and yet has a very good effect. The proceſs is as follows:

A ſtrong decoction of bark, thickened with gum tragacanth, is to be mixed with a portion of very pure muriate of tin, and this, when printed with the uſual management, will produce a colour of great brightneſs and durability. We mention this the rather, becauſe very many pleaſing effects may be obtained by this method which cannot be produced in the uſual way, by means of the acetate of alumine, and any of the yellow dyes that may be employed with it.

There is one very important advantage which this mode poſſeſſes,

possesses, *viz.* that should it be necessary to pad a piece in diluted acetate of alumine to obtain a pale lemon ground, the yellow figures, previously done by the above process, will not give out any part of their colour to the second mordant; whereas, whenever a strong yellow has been produced in the common way, the pattern is very apt to spread and become irregular, and oftentimes to stain the ground, when the piece comes a second time into the acetate of alumine.

Observing that the treatise from which we have made such copious extracts, contains no particular directions for the preparation of that superior kind of calico-printing called chintz-work, we applied to Mr. Parkes upon the subject, and he has furnished us with an original communication to supply that deficiency, which is as follows:

The term chintz-work is descriptive of that kind of calico-printing which is employed for beds, window-curtains, and other furniture, and it differs more in the richness and variety of the colours, than in any other circumstance.

In relating the processes by which these beautiful prints are produced, we shall suppose the calico to be already properly bleached and calendered, ready to receive the impressions of the block. The first thing then to attend to is, to apply the mordant for the colour which is intended to be imparted in the first instance. Thus if a black be designed, a mordant of acetate of iron, commonly called iron liquor, is thickened with gum, and printed upon the cloth in any pattern that may have been selected for the purpose. If this same mordant be diluted with water, it will form a proper mordant for a purple; and the same, still further diluted, will, when it comes into the dyeing copper, form a lilac. In this way, all the varieties of shades, from a pale lilac to a strong purple, and from purple to a black, may be produced by acetate of iron diluted with various proportions of water, and then dyed with madder.

In like manner, a colourless solution of acetate of alumine thickened with gum or flour paste, forms a mordant for dark red; if diluted with water it makes a common red; and by diluting it further and further every shade of pink may be produced. Again, by the admixture of acetate of iron, and acetate of alumine, a mordant for chocolate colours, maroons, &c. is formed, either approaching to the purple or the red, according to the admixture; that is, according to the proportion of either of these original mordants which may predominate in the mixture.

When these several mordants have been printed upon the calico, they are allowed to dry for two days or more in a stove or drying-house; they then go through the operation of dunging, which consists in rinsing them in warm water, in which a little cow-dung is diffused, as has been already described. When the pieces are sufficiently dunged, which is not the case till all the superabundant mordants are removed, they are well-washed in clean water, and then boiled in a decoction of madder, until the madder-bath is exhausted. In consequence of different mordants having been applied to the cloth, this one boiling in the madder-liquor will at once produce all the colours above-mentioned. When the pieces are thus dyed, they are to be rinsed in cold water, and laid upon the grass to bleach. By this exposure to the air for a few days, the whole of the ground to which none of the mordants had been applied, will become perfectly white.

The processes which have now been detailed, will produce what is called *common* chintz-work; but if it be desired to make the goods still richer, by the addition of yellows, bright olives, drabs, &c. the cloth must undergo another series of operations, which may thus be described.

Upon those parts of the calico which still remain white, any of the above mordants may be printed, according to the effect designed to be produced, after which all the preceding managements are to be repeated, except that instead of boiling in a decoction of madder, they are to be immersed for about half an hour, more or less, in a warm decoction of quercitron bark, the *Quercus nigra* of Linnæus; a most important dye-wood, introduced by Dr. Bancroft, and which is found to give out a much brighter colour to *tepid* water, than it does when treated with *boiling* water, or with water nearly approaching to that temperature.

The effect produced upon these prints by an immersion in a lukewarm decoction of this American bark, will be quite different from that produced by the madder; upon those parts of the cloth where the mordants have been printed which before produced a black, a dark olive only will be apparent, and instead of pompadours will be drabs, and instead of reds we shall have yellows, which will vary in intensity according to the strength of the aluminous mordant.

Again, a further variety may be given to these prints, if the yellow mordant, or acetate of alumine, be applied to any of the colours which have already been dyed with madder; but this must be done before the pieces are immersed in the decoction of bark. This application will convert the reds and pinks into different shades of oranges, and the lilacs into cinnamon colours. By means of these different processes an endless variety may be given to the goods, and a calico-printer of taste will never be at a loss how to produce a pleasing effect, whatever may be the patterns which he has to imprint upon the cloth. This second immersion in the dyeing vessel will, however, give a yellow tinge to the remainder of the whites, but a short exposure on the grass will obliterate it.

When chintz furniture-prints are designed to have as much variety of colouring as possible, a part of the remaining white is often coloured blue or green, or of any shade between those colours, by a still different process. This is done with what is called pencil-blue, which is a preparation that has already been described. The blue is given by putting in the prepared indigo with a pencil; and the green is produced by pencilling some of the same colour over certain parts of the pattern which has already been dyed yellow. When these colours have been imparted, the printing is said to be finished, and the pieces are hung up to dry for at least twenty-four hours, after which they are rinsed thoroughly in cold water; and when they have been dried with care, they are properly calendered and put up for sale.

Nothing now remains but to notice an improvement which has been made of late years by the introduction of *cylinder-printing*, and which has the advantage of superior accuracy and neatness, as well as of great expedition.

The machines which effect this are rather complicated and expensive; but they are so contrived that the cylinders on which the patterns are engraved, furnish themselves with colour during their revolutions; are kept clean by a steel knife, or *doctor* as it is called, passing over their surfaces the moment they have charged themselves with the thickened colour; and they have such a pressure given to them, either by means of screws or levers, which can be tightened or slackened at pleasure, that the whole surface can be made to deposit its colouring matter with the greatest certainty and exactness on the cloth, while this rolls over it in succession, from one end of the piece to the other.

These cylinders, which are made of copper, are from eighteen to forty-two inches in length, according to the width of the calico to be printed, and three and a half to five

five inches in diameter; and theſe maſſy rollers have the patterns enchaſed upon their ſurfaces, in the ſame way as a pattern is cut upon a flat plate of copper, that is intended to be employed in copper-plate printing. As theſe cylinders are made with plates of copper hammered into a circular form and joined by brazing, great loſs has ſometimes been ſuſtained by the engraving giving way upon the brazed joint. To obviate this, a patent has been lately obtained for boring the copper cylinder from the ſolid metal in the modern way of boring cannon.

Many of theſe machines are now contrived ſo as to carry two of theſe cylinders, each of which has a trough of colour attached to it, by which means two different colours may be printed on the ſame calico, at one and the ſame time.

Mr. Adam Parkinſon of Mancheſter has lately invented a machine capable of printing at one time, by means of one cylinder and two ſurface-rollers, or by two of the former and one of the latter, three diſtinct colours.

Theſe machines have not only the excellence of printing more correctly than can poſſibly be done by means of the block, but the ſaving of time and labour which they afford is great indeed. A piece of calico which would take a man and a boy three hours to print with one colour, or ſix hours to finiſh with two colours, may by this means be done in three minutes, or three minutes and a half, and then much more completely than could even have been imagined before the introduction of this invention.

Beſides theſe cylinders there are others which are called *ſurface-machines*, which contain cylinders of wood, and which have the pattern formed upon their ſurfaces in relief, exactly ſimilar to the blocks already deſcribed. Theſe are employed in particular ſtyles of work, eſpecially in light ground-work, and for certain kinds of refiſt and diſcharge work.

In light work, the white grounds are apt to be ſoiled by the cylinders: hence ſurface-machines were contrived, and theſe are not liable to the ſame objection. Cylinder-machines are more commonly employed in thoſe ſtyles which are full of colour and leave but little white.

It muſt be obvious to every one who is acquainted with the ſubject, what an aſtoniſhing facility theſe machines have afforded to the production of printed calicoes; and alſo what an advantage they give to the Britiſh printer in foreign markets.

But we cannot conclude without expreſſing our fears, that even theſe facilities may eventually be the means of doing a ſerious injury to the trade, and of deſtroying that confidence in the goodneſs of Britiſh prints, which has hitherto been generally felt in every market on the continent, and alſo in every part of the New World, wherever they have been introduced. We refer to that mode of printing which has lately been adopted, and which conſiſts in precipitating the colouring matter from logwood, and from other *fugitive* dyes, and in printing theſe on the cloth, without any mordant or previous preparation whatſoever. Thouſands of pieces of this ſort have been finiſhed at the low rate of one penny the yard, including every expence of colour, paſte, and printing. Theſe articles, it will ſcarcely be credited, are dried up immediately from the printing-machines, and are ſhipped abroad, without even being waſhed off.

To *waſh off* is a technical phraſe. It means the ſoaking and rinſing the pieces in water, in order to diſſolve and remove whatever gum or paſte had been employed with the colours in printing them.

Such goods, wherever they go, muſt produce great diſſatisfaction; for they will neither endure the rays of the ſun nor moiſture. The firſt ſhower of rain to which they may be expoſed, will not fail to waſh out the pattern, and reduce them to a worſe ſtate than that of plain white calicoes.

In the reign of queen Elizabeth, an act was paſſed to reſtrain the uſe of logwood in dyeing, on account of the fugitive nature of its colour; and if this degrading kind of printing be continued, the interference of the legiſlature will again become neceſſary, or the foreign trade will, from this cauſe alone, be entirely loſt to the country.

Printing, *Cylinder.* See the preceding article.

Printing *on Porcelain.* The art of printing, particularly as it applies to books, has, from its incalculable benefits and vaſt importance, excited at once the profound admiration and gratitude of the world; and this ineſtimable diſcovery has been claimed by ſeveral individuals, alike anxious for the honour of giving to mankind at large the advantage of a rapid and economical diffuſion of delight and inſtruction. The *firſt* idea of *types* was very probably given by the *Roman potters*, who were in the habit of ſtamping their names in *raiſed* characters on their vaſes, &c. The letters on this plan were, in fact, *models* of the types uſed by the firſt printers; and it appears ſingular that the idea of adapting ſuch models by the medium of ink, to the common purpoſe of multiplying words and ſentences, ſhould not have come into uſe until about the year 1442.

It will appear, on conſideration, ſtill more ſingular, that after the introduction of engraving on wood and copper, (which was in uſe at the ſame time with letter-preſs printing,) the art of transferring impreſſions of ornamental deſigns, from the copper-plate to the ſurface of porcelain or pottery, was not diſcovered till about the year 1760.

The Royal Porcelain Works in Worceſter, belonging to Meſſrs. Flight, Barr, and Barr, are the only eſtabliſhment that claims the honour of inventing this admirable and ingenious proceſs. We can find no mention of this art in the annals of this or any other country prior to this period. It was practiſed with great ſucceſs for many years in the works alluded to; and beſides the demand for home conſumption, large quantities were exported to Holland. In the year 1788, his preſent majeſty Geo. III., and his royal conſort the queen, with the princeſs royal, the princeſs Auguſta, and the princeſs Elizabeth, viſited the Worceſter Porcelain Works, and particularly noticed this ingenious branch of the art of decoration. The royal party were much gratified by the compliment paid them, in the ſtriking off impreſſions from two copper-plates with the likeneſſes of the king and queen, which had previouſly been engraved by direction of the proprietors, in order to exemplify the nature of the operation. The ſecret of the printing was, about the year 1781, conveyed from the works at Worceſter into the potteries of Staffordſhire, and has proved of infinite ſervice in extending this branch of national commerce, and affording employment to the numerous population in that part of the country. The common Britiſh blue and white printed earthen-ware is now held in high eſteem in foreign countries, from its cleanly and neat appearance, beſides its being in general uſe at home. This art is certainly beſt confined, as in the preſent day, to the inferior fabrics, ſuch as earthen-ware, as the material on which the print is made is reaſonable, and can be rendered at a price which ſuits the convenience of the conſumer for all common purpoſes. The method, as invented and adopted by the original proprietors of the Worceſter Porcelain Works, is as follows:—The engraved copper-plate having firſt

first been warmed on the stove, is prepared to receive the colour, which, being previously mixed with oils of a proper consistency, is then rubbed into the engraved lines, and the superfluous quantity of colour is carefully cleaned from the surface of the plate. The paper, which is very thin, and manufactured for the purpose, is then laid on the plate, and delivered to the pressman, who places it on a plank covered with warm flannels, and being fixed between two iron cylinders. it is drawn through by turning a wheel, exactly on the plan practised in taking off copper-plate prints. The paper bearing the clear-coloured impression is now removed from the copper-plate and delivered to the printer, who fixes the piece of porcelain in a vice, to keep it steady; and the printed paper is then rubbed with a wooden tool, covered with flannel, till the impression is completely transferred to the surface of the biscuit, or *unglazed* porcelain. The operation of rubbing on the impression being completed, the porcelain, with the paper left on the surface, is thrown into a tub of cold water, and in a short time the paper delivers itself, and leaves the print. The ware is now placed out to dry, and is afterwards carried to the kiln, where the impressions are burnt in. It is then dipped in the liquid vitreous substance called the glaze, is burnt a second time, and the colour, which is the oxyd of cobalt, (and most generally used,) comes out a neat blue, perfectly secured under the glaze.

An *improved method* of printing, comparatively of very recent invention, was introduced under the direction of the late Martin Barr, esq., and is now carried on in the Porcelain Works at Worcester, and is much admired for the *excellence* of the engravings, and the great beauty of the impressions. On this plan, the printing-press and stove are not necessary, as the engraved plate is charged with a prepared oil by the printer, who cleans the surface of the engraving with the hand; and instead of paper, a *bat of glutinous consistency* is cut out and laid on the copper-plate, and is so ductile as to adapt itself to the form of any vessel intended to be printed; and by the simple pressure of a stuffed leathern ball *with the hand*, produces a perfect impression of the subject *in oil* on the smooth side of the bat. The ware being rubbed dry and clean, the bat is now gently pressed with the leathern ball on the *glazed* surface of the porcelain, and when removed the impression appears complete, *but only in oil*. The colour, in form of a powder, is then lightly moved over the oil impression with a piece of carded cotton, and the print completely cleared of all that is superfluous. The porcelain is afterwards carried to the enamellers, who finish the design by adding some decorations in gold; and it is then passed through the enamelling kiln, where the oil is evaporated by the fire, and the colour, which is always a mineral preparation, unites firmly with the glaze, and becomes perfectly durable as the tints laid on with the camel's-hair pencils by the painters. The great advantage of this plan is, that the engraving can be executed *much finer* for the smooth surface of *the glazed porcelain*, than for the coarser blue and white prints, (which are laid on the *rough unglazed surface*,) as the glaze is capable of receiving the *finest touch* the artist can put into his engraved plate. Messrs. Flight, Barr, and Barr, the proprietors of these works, have in consequence introduced beautiful engravings of figures from the antique, besides designs in landscapes, flowers, shells, &c. which reflect no small degree of credit on this branch of the art of printing. Considerable quantities have been exported to the East and West Indies; and where economy is the object of the consumer, this style of decoration suits very well, however deficient in richness of effect and elegance, to the more elaborate production of enamelled designs, executed in these interesting and highly-respectable works.

PROFLUVIUM, l. 2, for *veneris r. ventris.*

PROJECTION *of the Sphere, Orthographic.* PROB. I. l. 8, for I C and F G, *r.* I C.

PROMEROPS, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, habit as in the genus Upupa; feet formed for walking; tail lengthened, and in most species cuneated. Dr. Shaw enumerates and describes the following species; *viz. Cæruleus*, or blue P. with black bill and legs; the Upupa indica, or blue promerops of Latham; a native of India: *Cafer*, or brown P. whitish beneath, with rufescent breast, and very long tail; the Upupa P. or Cafer P. of Latham, and the Upupa P. or Merops cafer of Linnæus; a native of Africa, and common about the Cape of Good Hope: *Striatus*, or brown P. beneath white, with black undulations and very long tail; Upupa papuensis, or New Guinea brown P. of Latham; native of New Guinea, inhabiting large woods: *Superbus*, or black P. with violet and green gloss, foliated golden shining scapular feathers, and very long tail; the Upupa superba and great P. of Latham; a magnificent species, exceeding all the rest in the splendour and elegance of its plumage; a native of New Guinea: *Paradiseus*, or chesnut P., the Upupa paradisea of Linnæus and Latham, and crested P. of the latter: *Mexicanus*, or grey P. with green and purple gloss, blueish wings, yellowish belly, and very long tail; Upupa mexicana, or Mexican P. of Latham; a native of Mexico, frequenting mountainous regions, and feeding on various kinds of insects: *Aurantius*, or orange-coloured P., with tail of moderate length and even at the top; the Upupa aurantia, or orange P. of Latham; native of Guiana, frequenting the small islands in the mouth of the river Berbice; Fernandez describes the supposed female of this species under the name of *Cochitolotl: Erythrorynchos*, or black P. with green and purple gloss, red bill and legs, and long tail with the feathers spotted with white near the tip; the Upupa erythrorynchos, or red-billed P. of Latham; an highly elegant species, an inhabitant of Africa.

PROPERTY, LITERARY. (See LITERARY *Property.*) The state of literary property has been considerably improved since the article on this subject appeared in the body of this work. By the act of 54 Geo. III. c. 156. an absolute term of twenty-eight years copyright has been vested in the author of every book that shall be published after the passing of that act, and in his assigns, and if the author shall survive that period, the copyright is also secured to him for his life. On books that were published before this statute was made, the second contingent term of fourteen years granted by the former acts on this subject, was made absolute in such authors as were then alive, and a life interest was also added if they survived this extension. On this last subject, the court of King's Bench has decided in a recent case, that if the book had become the property of the public at the time the act passed, which was on the 29th July 1814, the benefit granted by the act to the authors of books published before that time, were not meant by the legislature to apply in such instances.

The same act continued the obligation of delivering eleven copies of every book, and of its maps, plates, &c. to the eleven libraries therein mentioned, being the British Museum, Sion College, the Bodleian Library at Oxford, the Public Library at Cambridge, the Library of the Faculty of Advocates at Edinburgh, the Libraries of the four universities of Scotland, Trinity College Library, and the King's Inns

Library at Dublin. This delivery has been felt to be a fevere burthen, and feveral petitions have been prefented to parliament by authors as well as publifhers of books to be relieved from it. Thefe petitions were in the feffions of 1818 referred to a committee of the Houfe of Commons, which examined many witneffes on the fubject, and made a report to the Houfe of the following import:

That it is the opinion of this committee, that it is defirable that fo much of the copyright act as requires the gratuitous delivery of eleven copies fhould be repealed, except in fo far as relates to the Britifh Mufeum, and that it is defirable that a fixed allowance fhould be granted in lieu thereof, to fuch of the other public libraries as may be thought expedient.

That if it fhould not be thought expedient by the Houfe to comply with the above recommendation, it is defirable that the number of libraries entitled to claim fuch delivery, fhould be reftricted to the Britifh Mufeum, and the libraries of Oxford, Cambridge, Edinburgh, and Dublin univerfities.

That all books of prints, wherein the letter-prefs fhall not exceed a certain very fmall proportion to each plate, fhall be exempted from delivery except to the Mufeum, with an exception of all books of mathematics.

That all books in refpect of which claim to copyright fhall be exprefsly and effectually abandoned, be alfo exempted.

That the obligation impofed on printers to retain one copy of each work printed by them fhall ceafe, and the copy of the Mufeum be made evidence in lieu of it.

PROPHECY, col. 3, l. 26, for Wolfton *r.* Woolfton. Col. 5, l. 10 from bottom, for Woolafton *r.* Woolfton.

PROPOLIS, l. 33, add—See WAX.

PROPORTIONAL COMPASS, l. 2, *r.* proportional. Col. 2, l. 8, *r. fig.* 1. *Plate* I. of *Proportional Compaffes.* Col. 5, l. 10 from bottom, infert *fig.* 10. Col. 1, l. 30, *r. fig.* 11.

PROVERB, col. 1, l. 17 from bottom, for print *r.* fruit.

PROVIDENCE, NETHER, l. 1, *r.* Delaware for Luzerne. Col. 2, l. 2, *r.* Delaware.

PRUSSIC ACID, in *Chemiftry*. See CYANOGEN.

PUFF-BALL, l. 2, add—and TULOSTOMA.

PULASKI, for PULASNI, l. 2, add—of whom 528 were flaves in 1810.

PULTNEY, a townfhip of Belmont county, in Ohio, having 645 inhabitants.

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PURANA, col. 3, l. 6, for Varifhta *r.* Vafifhta.

PURPURIC ACID, in *Chemiftry*. The name of an acid principle recently difcovered by Dr. Prout; produced by the action of nitric acid upon the lithic or uric acid. The beautiful purple fubftance produced by the action of the nitric acid and heat upon lithic acid, has been long known to chemifts. This purple fubftance is a compound of the acid in queftion and of ammonia. This acid, which may be likewife formed from the lithic acid by chlorine and iodine, poffeffes the remarkable property of forming beautiful purple compounds with the alkalies and alkaline earths. Hence the name of *purpuric* acid has been adopted by Dr. Prout, which was fuggefted by Dr. Wollafton.

Purpuric acid may be feparated from the *purpurate* of *ammonia* above-mentioned, by the fulphuric or muriatic acids. It ufually exifts in the form of a light yellow or cream-coloured powder. It is exceedingly infoluble in water, and confequently poffeffes no tafte, nor affects litmus paper, though it readily decompofes the alkaline carbonates by the affiftance of heat. It is foluble in the ftrong mineral acids and in alkaline folutions, but not in dilute acids in general. It is infoluble in alcohol. When expofed to the air it affumes a purple colour, probably by attracting ammonia. Submitted to heat it is decompofed, and yields carbonate of ammonia, pruffic acid, and a little fluid of an oily appearance.

The alkaline *purpurates*, as before obferved, all form folutions of a beautiful purple colour. They are capable of cryftallizing, and their cryftals poffefs fome remarkable properties. The purpurate of ammonia cryftallizes in quadrangular prifms, which when viewed by tranfmitted light appear of a deep garnet-red, but by reflected light two of the oppofite furfaces appear of a beautiful green, while the other two retain their natural red colour. This curious property feems to be poffeffed by the other alkaline purpurates. The metallic purpurates are in general remarkable for their folubility, and the beauty of their colours. The *purpurate* of zinc is of a beautiful gold-yellow, the purpurate of tin of a pearly-white. The other purpurates are all more or lefs of a red colour.

Dr. Prout thinks it probable, that this acid forms the bafis of many animal and vegetable colours. The pink colour of the fediment in the urine of fever feems to be owing to the purpurate of ammonia. Dr. Prout alfo thinks, that fome of its falts might be ufed as paints, and alfo for dyeing, as they appear to poffefs ftrong affinities, efpecially for animal fubftances. See Philofophical Tranfactions for 1818.

PURSHIA, in *Botany*, fo called in juft commemoration of Mr. Frederick Purfh, author of the rich *Flora Americæ Septentrionalis*.—De Cand. Tr. of Linn. Soc. v. 12. 157.—Clafs and order, *Icofandria Monogynia*. Nat. Ord. *Senticofæ*, Linn. *Rofaceæ*, Juff.

Eff. Ch. Calyx five-cleft. Petals five. Capfule fuperior, oblong, of one cell, burfting at one fide. Seed folitary, erect.

1. P. *tridentata*. Downy Purfhia. De Cand. (Tigarea tridentata; Purfh 333. t. 15.)—In the meadows of the Rocky-mountains, and on the Columbia river, flowering in July. A much branched *fhrub*, with wedge-fhaped, crowded *leaves*, three-lobed at the extremity, and folitary, terminal, yellow *flowers*, nearly the fize of Hawthorn.

PYMATUNING, l. 3, *r.* 379.

PYRAMID, col. 2, l. 36, *dele* and character and feet.

PYROACETIC SPIRIT, in *Chemiftry*. See ACETIC *Acid*.

Q.

QUADRUPEDS, col. 6, l. 33 from bottom, add—See alſo NATURAL *Hiſtory*.

QUARANTINE, that ſpace of time (uſually forty days, as the term manifeſtly implies) which veſſels and perſons are reſtricted from having intercourſe with other veſſels or perſons, or with the ſhore, on their arrival from places ſubject to the plague or other infectious diſeaſe or diſtemper, or having held communication with ſhips coming from ſuch places, or on board of which any infectious diſeaſe ſhall have appeared during the voyage.

The public health is a matter of the higheſt importance, and whoever is ſenſible of the havoc which the plague and other infectious diſeaſes formerly made in this country, (ſee PLAGUE,) and conſiders the prevalence of ſuch diſeaſes in ſome parts of the globe, how eaſily they are communicated, and how long the poiſonous contagion lies dormant without loſing its malignity, will readily aſſent to the ſtrong neceſſity that exiſts for rigorous precautions being adopted, to prevent its introduction into theſe kingdoms.

Of ſuch common concern, indeed, is the health of large and trading communities, that the chief magiſtrates (ſays Blackſtone) have the guardianſhip of the public health, and are empowered to iſſue ſuch ordinances as may be deemed neceſſary, either to prevent the introduction of infection from neighbouring or remote countries, or for ſeparating thoſe actually infected by removal, or by cutting off communication with their abode.

In this country, a Board of Health has been inſtituted, to inquire into the nature of the infection of the plague, and the beſt mode to counteract its effects; and public ordinances have been made from time to time upon this ſubject; formerly by proclamation, but latterly by parliament. And ſuch has been the anxious ſolicitude to frame the laws and orders to obtain the ends deſired, that they have at various times undergone laborious reviſion, and ſuch further regulations and amendments have been introduced as by experience were found to be neceſſary. Nor has the care and anxiety of the Britiſh government ſtopped here, for their conſuls and public functionaries abroad are inſtructed to convey, with the utmoſt promptneſs, intelligence of the appearance of any epidemic diſtemper in the places where they reſide, or in ſuch as are in their vicinity. Government is thereby enabled to iſſue neceſſary directions, for ſubjecting ſhips and perſons arriving from thence, to a more rigid examination and ſecluſion than might otherwiſe have been adopted. Governors and commanders have ſimilar local powers and inſtructions, and are empowered to make ſuch orders, either to regulate or entirely cut off communication with ſuſpected places and veſſels as they ſhall deem neceſſary. In ſea-ports, veſſels and their cargoes and crews are ſubjected, on arrival, to examination; where the two former are aired and purified for a neceſſary time, and the latter retained a certain number of days, in which time, it is ſuppoſed, any infectious diſeaſe they might retain, would make its appearance.

In inland places, reſtraints are likewiſe impoſed for ſimilar purpoſes, and intercourſe thereby cut off by proper means, (uſually a cordon of troops drawn round the infected place,) which taking poſſeſſion of the roads, rivers, and watercourſes, effectually prevents infected perſons entering the place, as well as others from eſcaping.

All theſe meaſures, though they may appear arbitrary, are founded upon ſound policy; and however irkſome they may be found by thoſe who are ſubjected to their operation, yet if they reflect for a moment what dread is created at the very apprehenſion of approaching perſons afflicted with diſeaſes of an infectious or putrid nature, or having even the poſſibility of harbouring contagion; and what dreadful and painful conſequences are known to follow from an unguarded or indiſcreet expoſure, in ſuch caſes they will refrain from haſtily ruſhing into ſociety, without ſubmitting to ſuch ſalutary precautions which are ſo abſolutely neceſſary, or at leaſt ſo ſatisfactory to their fellow-citizens. No doubt the time is tedious, and the places appointed may be but little calculated to afford comfort to or reconcile "*les detenus*;" but when they reflect that thouſands may be ſwept away in a few days, by the introduction of ſuch a malady, it is hoped they will ſubmit with leſs impatience. One thing which makes the neceſſity leſs apparent is, that from the length of time ſince England has been afflicted with ſuch a calamity, and from the ſucceſs of the meaſures that have long been adopted to prevent its introduction, perſons in general have no actual knowledge, and ſtill leſs fear of its dreadful effects, and they perceive with indifference, as it were, an object at a diſtance, which on nearer approach would almoſt paralize their ſenſes.

That perſons and commerce may be as little impeded as the nature of circumſtances will admit, a certificate is always obtained by perſons coming from places where any of theſe diſtreſſing maladies are of frequent occurrence; by this means, the general ſafety is more ſtrongly ſecured, as well as leſs impediment given to the trader and the traveller; becauſe when it declares the country free from any infectious diſeaſe or diſtemper, no further detention is generally required, than is neceſſary to tranſmit the caſe to the conſideration of thoſe who are intruſted with the general ſafety. If on the contrary the certificate ſtates, that an infectious diſtemper does prevail at ſuch place at the time of their departure, or if no certificate is brought, the examinations are more minute, and the purifications are of longer duration.

It is not intended in this article to ſay any thing of the nature of infectious diſeaſes; they will be found in the previous work under the heads *Epidemical Diſeaſes*, *Plague*, *Yellow*

Yellow Fever, Contagion, &c. to which the reader is refpectively referred. A fuccinct account only will follow of fuch enactments and orders as have been made with the view of fecuring the performance of quarantine, and that the neceffity and value of thefe regulations may be more generally known.

Much pains and inquiry have been inftituted for confidering the moft effectual means for preventing the introduction, and of the fteps moft neceffary to be adopted, in cafe of the fudden appearance of the plague, both with regard to the treatment of the perfons and their houfes, as well as their dealings and communication with each other; whereby fuch inftructions can on any emergency be immediately iffued, as muft check the extenfion and deprive the malady of half its inveteracy and of half its terrors.

Befides this, fo much more air has been admitted to large and manufacturing towns than formerly, fo much more cleanlinefs fecured by underground drainage, as well as among the lower claffes, that in addition to their better condition generally, in point of food, and the treatment of febrile complaints being better underftood, its recurrence or virulence muft be confiderably leffened. Apprehenfions and falfe alarms will, at times no doubt, be created among weak and credulous perfons, and it will be moft judicious in the local magiftracy, immediately to inftitute rigid inquiry into the rumour, and either to take prompt meafures to contradict it, and thereby prevent unneceffary alarm, or to adopt fuch speedy fteps as will fecure thofe deemed infected from having intercourfe with others who are in health, until his majefty's privy council can iffue fuch directions as the cafe may require, which they are fpecially authorifed to do by 45 Geo. III. ch. 10. fect. 12. So much is the privy council on the alert in this refpect, that it directed, and deemed prudent for the fafety of the community, to have three veffels funk a few years ago, having cargoes of fkins from Mogadore on board, under very ftrong fufpicion of their harbouring the plague.

It will not here be neceffary to make an enumeration of the many acts that have been paffed refpecting quarantine, fince they were all repealed, (except fo much of the 39 & 40 Geo. III. c. 80. as repealed the former acts,) by the 45 Geo. III. which paffed 12th March 1805, and which embodies many of the former provifions and enactments. Three other acts have paffed fubfequently, (46 Geo. III. c. 98. 50 Geo. III. c. 20. and 51 Geo. III. c. 46.) making further provifions and amendments; and feveral general orders in council have been publifhed in the London Gazette, by authority of, and in furtherance of thofe laws; and which have equal force with the laws themfelves. Indeed but for the levying of duties, and the infliction of pecuniary penalties and capital punifhments, it is conceived acts of parliament would have been unneceffary, for by the common law the king is invefted with the care of the public health, and his edict muft of neceffity have been binding on the fubjects refiding in or trading to this country. But to return: the 45 Geo. III. c. 10. in the firft place, declares what fhips, perfons, and goods, are liable to the performance of quarantine. They are,

1. All fhips and veffels (including his majefty's fhips of war) arriving from or having touched at any place, from whence his majefty fhall declare it probable the plague or other infectious difeafe or diftemper may be brought, and all perfons, goods, wares or merchandize, packets, packages, baggage, wearing apparel, books, letters, or any other articles whatfoever, on board the fame. (Act, fect. 10.) [*Note.* — This is deemed to relate to the outward as well as the homeward voyage. By 5 Geo. III. c. 25. fect. 3. letters are to be given to the fuperintendent, who is to difpatch the fame in the ufual manner, after due precaution.]

2. All fhips, veffels, and boats, receiving any perfon, goods, wares or merchandize, packets, packages, &c. out of fuch fhips, whether they came or were put on board the fame, either before or after the arrival of fuch fhips at any port in Great Britain, or the iflands of Guernfey, Jerfey, Alderney, Sark, or Man, and whether they were bound to Great Britain or not. They are likewife deemed to be liable from the time of the veffels leaving fuch infected place, or from the time when fuch perfon or goods went or were received on board fuch veffel. (Act, fect. 10.)

3. Ships and veffels importing certain goods, more efpecially liable to retain infection, (to be fet forth in any order in council,) and which may be carried from infected places into other countries, and from thence imported into Great Britain, are liable to all fuch regulations and reftrictions as are made concerning quarantine. (Act, fect. 11.) For the goods, fee Clafs 1 and 2.

4. Ships and veffels coming from any place in Europe, without the ftreights of Gibraltar or America, (where there is not a regular eftablifhment of quarantine,) having on board any goods enumerated in the firft clafs, the produce of Turkey, or Africa within the ftreights, or Weft Barbary, and all fhips and boats receiving fuch goods out of fuch fhips, are, together with all perfons, (and pilots,) goods, &c. to perform quarantine, as fhips coming from the Mediterranean with clean bills of health (which is fifteen days). Order in council, 5th April 1805, fect. 5.

5. But by order of the prince regent in council, 26th April 1817, fhips which have failed from ports deemed liable to infection, to others which are not liable to infection, and afterwards arriving here, fhall not be liable to perform quarantine, if they come in ballaft, or with a cargo taken in at the laft-mentioned port, if the mafter fhall make oath that all the goods of the firft and fecond claffes were landed or otherwife difcharged at the latter port forty days at leaft before her arrival in Great Britain, and that no plague, &c. exifted on board at any time from the commencement of the outward voyage to the termination of the homeward one; and provided alfo, that the goods taken on board at the port not liable to infection are not the growth, &c. of any country declared liable to infection; or if any goods of Clafs 1. taken in at a place not deemed liable, fhall be the produce of any country deemed liable, then on proof according to the 43d fection of order in council of 5th April 1805, that fuch goods have performed quarantine at one of the foreign Lazarets.

6. Ships and veffels alfo arriving from any place whatever, under any alarming or fufpicious circumftances as to infection, are liable to fuch regulations and reftrictions as are made by any order of his majefty (act, fect. 11.); or by any three of the lords of the council, in cafe of any unforefeen emergency on any fhip arriving with any infectious difeafe on board, or if any infectious diftemper has appeared in the courfe of the voyage, although fhe fhall not have come from any place from whence his majefty has declared it probable the plague, &c. may be brought. (Act, fect. 12.) And all fuch fhips and boats, and all perfons, (including pilots,) goods, wares, &c. whether imported or put on board fuch fhips, boats, &c. as well as on board the receiving fhip, fhall be obliged to perform quarantine in fuch places and manner, and for fuch time, as fhall be directed by his majefty's order in council, publifhed in the London Gazette; and that until they have performed and been duly difcharged from quarantine, they fhall not come or be

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brought on ſhore, or go and be put on board any other ſhip, &c. in order to go on ſhore, though ſuch ſhip may not be bound to Great Britain, unleſs by directions and permiſſion of his majeſty in council. And all ſhips and boats, perſons, pilots, maſters or commanders, goods, wares or merchandize, coming from ſuch reſtricted or any infected place, ſhall be ſubject to all the rules, regulations, and proviſions of the act, and any order in council, and to all pains and penalties, &c. of that act for any breach or diſobedience to it, or of any order in council made under its authority. Sect. 10. of the act.

By 46 Geo. III. c. 98. his majeſty, or any of the lords of the council, as often as they ſhall apprehend that the yellow fever, or other highly infectious diſtemper, prevails in America, or the Weſt Indies, may require every veſſel coming from or having touched at thoſe places, to come to anchor at certain places to be appointed by the commiſſioners of the cuſtoms, for the purpoſe of having the ſtate of health of the crew aſcertained before ſhe ſhall be permitted to enter any port in Great Britain; but the ſhip ſhall not be deemed liable to quarantine, unleſs it ſhall be afterwards ſpecially ordered under that reſtraint. Sect. 6.

Shortly after the paſſing the act of the 45 Geo. III., and under its immediate authority, an order in council was iſſued, dated 5th April 1805, which declared what places his majeſty judged it probable the plague, or other infectious diſtemper or diſeaſe, may be brought from. *They are* by veſſels coming from or through the Mediterranean, or from the Weſt Barbary on the Atlantic ocean, and alſo by the importation of certain goods being the growth or produce of Turkey, or Africa within the ſtreights of Gibraltar or Weſt Barbary, from any port in Europe without the ſtreights, or on the continent of America. And by further order, dated 7th November 1805, it was declared, that an infectious diſeaſe might be brought by veſſels coming from or having touched at any port in the ſtates of Pennſylvania or New York, but this order has ſince been annulled.

The Goods deemed moſt liable to retain infection are ſet forth in three tables, by ſect. 33, 35, and 38 of the order in council, and are as follow:

Class I.—Apparel; artificial flowers; baſt, or any article made thereof; beads, bracelets, or necklaces, in ſtrings; beds, bed-ticks; books; brooms; bruſhes; burdetts; cambletts; canvas; carmenian wool; carpets; cordage not tarred; cotton wool, yarn, or thread, all articles wholly made of or mixed with cotton, ſilk, wool, thread, or yarn; down; feathers; flax; furriers' waſte; goats' hair; gold or ſilver in thread, cotton, hair, ſilk, or wool, or any other ſubſtance hereinbefore enumerated; grogram; hats, caps, or bonnets of ſtraw, chip, cane or any other material; hemp; hoofs; horns and horn tips; hair of all ſorts; leather; linen; liquor of any kind, in bottles or flaſks; lute-ſtrings, catlings, or harp-ſtrings; maps; mattreſſes; mats and matting; mohair yarn; nets, new or old; paper; packthread; parchment; pelts; platting of baſt, chip, cane, ſtraw, or horſe-hair; quills; rags; ſails and ſail-cloth; ſilks, *viz.* crapes and tiffanies, huſks and knubs, raw ſilk, thrown or organzine ſilk, waſte ſilk, wrought ſilk; ſkins, hides, and furs, and parts or pieces of ſkins, hides, and furs, whether undreſſed, or in part or wholly tanned, tawed, or dreſſed; ſponges; ſtraw, or any article made or mixed with ſtraw; ſtockings; thread; tow; vellum; whiſks; wool, whether raw or anywiſe wrought; yarn of all ſorts.

Class II.—Senna; jalap; gum arabic; gum tragacanth; myrrh; opium; ſcammony; antimony; cantharides; alum; juniper-berries; pomegranates, flowers and ſeeds; ſal nitre; ſal ammoniac; madder; ſumach; galls; tobacco; coffee; wood in raſpings; cork.

Class III.—Grain; pulſe, and other ſeeds in bulk; grain, and other ſeeds in ſacks or caſks, or baſkets of ruſh mat; dried fruits in baſkets, or packages made of articles enumerated in the firſt claſs, or in packages of wood and oil in barrels.

Where veſſels are to perform quarantine depends upon circumſtances; for if the plague, &c. appears on board any ſhip *within the ſtreights of Gibraltar*, ſhe is to go to one of the foreign lazarets (at Malta, Ancona, Venice, Meſſina, Leghorn, Trieſte, Genoa, or Marſeilles); but if it appears *without the ſtreights*, then ſhe is to go to the harbour of St. Helen's-Tean and North Withel, (two of the iſlands, called the Scilly iſlands,) or ſuch places as his majeſty ſhall appoint. (Sect. 13. of the act.) And immediate intelligence ſhall be given to the commiſſioners of the cuſtoms, and to the privy council, ſo that meaſures may be taken for the comfort and ſupport of the crew and paſſengers, and ſuch precautions uſed as the caſe may require; and the ſhip is to remain there, and none of the crew or paſſengers are to go on ſhore, or have any communication with any other veſſel; and any perſon who ſhall not act conformable hereto, or any directions of the privy council, are to ſuffer death without benefit of clergy. If the veſſel cannot make thoſe iſlands or other places appointed, or ſhall be forced by ſtreſs of weather to go up either of the Channels, ſhe ſhall not enter any port in Great Britain, or the iſlands of Guernſey, Jerſey, &c. but ſhall remain in ſome open road till the maſter receives direction from the privy council. Sect. 13. of the act.

The next regulation is, that ſhips *not having the plague* on board, coming through the Mediterranean, or Weſt Barbary, *without clean bills* of health, (except ſhips of war, tranſports, or other veſſels in the actual ſervice of government, which are to go to the Motherbank near Portſmouth, in a place marked out with yellow buoys,) and all ſhips receiving goods out of them, are to perform quarantine at Stangate Creek, and no where elſe. (Order, ſect. 4.) But by order 15th July 1813, ſhips not having the plague actually on board, (except king's ſhips, &c.) coming from or through the Mediterranean, or Weſt Barbary, without clean bills of health, bound to the weſtern ports of Great Britain, may perform quarantine at Milford Haven.

The 46 Geo. III. c. 98. ſect. 7. authoriſes his majeſty or the privy council to prohibit (by proclamation or publication in the Gazette) any perſon, ſhips, or boats from going within the limits of any ſtation which may be aſſigned for the performance of quarantine by ſhips without clean bills of health, under the penalty of 500*l.* By orders in council, dated 21ſt July 1806, and 6th September 1811, it was ordered, that no ſhip or boat (except quarantine and cuſtom-houſe boats) ſhould go, but on caſes of emergency, within the place at the Motherbank ſet out with yellow buoys for ſhips not having clean bills of health; and that ſhips with clean bills of health ordered to the Motherbank are to go within the compaſs of the yellow buoys, but ſeparate from his majeſty's ſhips and ſhips without clean bills.

The two weſt buoys are placed to the eaſtward of Wooton Creek, and the two north ones near the Iſle of Wight, with another buoy midway between them, and a red buoy as a mark for a burying-place.

By ſect. 2. of the order of 5th April 1805, ſhips (king's ſhips as well as others) with clean bills of health,

Bound to London, Rocheſter, Faverſham, or any creeks or places belonging to or within any or either of the above ports,	are to perform quarantine at Stangate Creek.

[*Note.*

[*Note.*—In the caſe of ſhips coming from Turkey, and obliged to perform quarantine before their entry into the port of *London*, it is uſual for the conſignee to ſend down perſons at his own expence to pack and take care of the goods; and where a conſignee had omitted to do ſo, and the goods were damaged by being ſent looſe to ſhore, it was held that he had no right to call upon the maſter for a compenſation. Dunnage *v.* Jolliffe, before lord Kenyon, chief juſtice, at Guildhall, M. T. 1789.]

Ships bound to Leigh, and the ports and creeks extending from thence to, and including Berwick, -	Whitebooth Roads, between Hull and Grimſby.
—— bound to Carliſle, and the ports and creeks extending from thence to, and including Beaumaris and the Iſle of Man, - - -	Bromborough Pool, or Milford Haven, by orders, dated 18 Oct. 1809, and 27 June 1810.
—— bound to Sandwich and Cowes, and the ports incluſive, - -	Motherbank near Portſmouth.
—— bound to Poole and Scilly, and the ports incluſive, - - -	St. Ives' Pool, within the harbour of Falmouth.
—— bound to Bridgewater and Swanſea, and the ports incluſive, -	King's Road and Portſhute Pill.
—— bound to St. Ives and Aberyſtwith, and the ports incluſive, -	Milford Haven.
—— bound to Jerſey, Guernſey, Sark, or Man, or any part of them,	The Motherbank, or St. Ives' Pool.
—— bound to Leith, and all the ports or creeks extending from thence along the eaſtern coaſt of Scotland, as far as and including Aberdeen, -	Inverkeithing Bay.
—— bound to Glaſgow, and all the ports or creeks extending along the weſtern coaſt of Scotland, as far as and including Wigtoun, - -	Holy Loch, in the Frith of Clyde.
—— bound to Inverneſs, and all the northern coaſt of Scotland, as far as and including Stornaway, -	Inverkeithing Bay, by order 21 July 1806.
—— bound to Dumfries and Kirkcudbright, and all the ports and creeks on the ſouth-weſt coaſt of Scotland, - - -	Holy Loch, by order 21 July 1806.
—— bound to any port or place on the coaſts of England and Scotland, not within any of the before-mentioned limits, - - -	At the neareſt of the above ſtations to the place to which ſhe is bound; and

Veſſels liable to quarantine, and having *a clean bill of health* on board, which are bound to any of the above ports, and have paſſed the place appointed to perform quarantine, either from the maſter's ignorance of being liable, or by ſtreſs of weather, or other unavoidable circumſtance, may, on proof on oath that it was unintentional, and not with the view of avoiding the regulations of quarantine, repair (and ſhall be compelled to go) to any other place at the diſcretion of the quarantine aſſiſtant, &c. keeping the proper ſignal flying during the whole time. Order, ſect. 6.

When any country or place is known or ſuſpected to be infected with the plague, &c. then, whenever any ſhip ſhall attempt to enter any port in Great Britain, or the iſlands of Guernſey, &c. ſhe ſhall be viſited by the ſuperintendent of quarantine, or proper officer of cuſtoms; and the maſter, upon being deſired, (for which purpoſe he or the pilot is to bring to, under penalty of 100*l.*,) ſhall give a true anſwer in writing to all ſuch queſtions and interrogatories as ſhall be put to him; and if he refuſes to make a true diſcovery in any of the particulars, or if he ſhall give a falſe anſwer, (though not upon oath,) he ſhall forfeit 200*l.* (Act, ſect. 18.) If it appears by ſuch anſwers that ſhe is liable, the ſuperintendent ſhall direct her to repair forthwith to the proper place, and ſhe ſhall not enter any other place, (except from ſtreſs of weather or damage,) and ſhe may be compelled, by all neceſſary means, (either by firing of guns upon her, or any other kind of neceſſary force,) to go to the proper place. (Order, ſect. 8.) And if the maſter does not cauſe ſuch ſhip to be conveyed to the place appointed, he ſhall forfeit 500*l.* 45 Geo. III. c. 10. ſect. 21.

Veſſels *not bound to this country* are not to touch at or attempt to enter any port in Great Britain, or the iſlands belonging thereto, although they may be ports appointed for performing quarantine (except for orders, or in conſequence of ſtreſs of weather, or loſs or damage at ſea); and then the maſters are to anſwer the preliminary queſtions, and to conform to all ſuch directions, as they ſhall receive, as well with reſpect to their continuance at ſuch ports, and departing and repairing to any other place, as to all other regulations, &c. touching quarantine; and if they do not comply, they may be compelled to put to ſea; to aid which, the commander, or other officer of his majeſty's ſhips of war, may be called in. Order, ſect. 7, and 45 Geo. III. c. 10. ſect. 19.

The duration of quarantine depends upon circumſtances; as, the country from whence the ſhip arrives, the kind of goods ſhe brings, the production of a bill of health, or otherwiſe. And the commencement is to be taken for ſhip and goods (where the cargo conſiſts of goods of Claſs I. and II., and goods non-enumerated), when the whole of the two former are removed. (Order, ſect. 39.) But if there are no goods of thoſe claſſes, then from the time of the veſſel's arrival at the quarantine ſtation. (Sect. 12.) And for ſhips without bills of health, but with cargoes not enumerated in the two claſſes, and not deemed infectious, from the day the quarantine guardians are put on board. Order, ſect. 40.

The lords of the council may iſſue orders for ſhortening the time of quarantine performed by particular ſhips, perſons, or goods, &c. or for wholly releaſing them, abſolutely or conditionally, as they ſhall think fit. 45 Geo. III. c. 10. ſect. 12.

The duration for ſhips performing quarantine is as follows:—

Ships having the plague on board, and arriving under any alarming or ſuſpicious circumſtances, the time is left to the diſcretion of the privy council. 45 Geo. III. ſect. 12 and 13.

Ships coming from or through the Mediterranean or Weſt Barbary with clean bills of health, having on board goods of Claſs I. and II., fifteen days. Order, ſect. 12.

Ships arriving without clean bills of health, thirty days. Order, ſect. 37—40.

Ships arriving from places in Europe without the ſtreights, or on the continent of America, where there is not a quarantine eſtabliſhment, bringing goods of the 1ſt Claſs, the produce of Turkey, or Africa within the ſtreights, or Weſt Barbary, to perform quarantine for fifteen days. Order, ſect. 5.

Ships bringing touched, *i. e.* ſuſpected bills, to perform quarantine for twenty days. Order, ſect. 41.

The time for paſſengers and the crews of veſſels performing quarantine is to be governed by the nature of the cargoes of the reſpective veſſels, and whether they come with or without bills of health.

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The duration for goods performing quarantine to be as follows:—

Goods of the 1ſt Claſs, coming *without clean bills of health*, forty days at the lazaret. Order, ſect. 33.

Goods of the 2d Claſs, coming *without clean bills of health*, thirty days. Order, ſect. 35.

Goods remaining after thoſe of the 1ſt and 2d Claſs are removed to a floating or land-lazaret, are to perform quarantine for thirty days, and are to be afterwards fumigated. Order, ſect. 37.

Goods arriving from or through the Mediterranean, or Weſt Barbary on the Atlantic ocean, in ſhips not having the plague on board, *without clean bills of health*, to be removed to the floating lazaret at Stangate Creek, and perform quarantine for thirty days. Order, ſect. 14. and 40.

Goods coming from thoſe places *with clean bills of health* are to be aired one week in the ſame ſhip; except goods of Claſs I. and II., which are to be removed to the lazaret, and be aired for fifteen days. Order, ſect. 13.

Goods coming in ſhips with *ſuſpected bills of health* to be treated as ſhips coming without bills of health, except that they are to perform ten days leſs quarantine. Order, ſect. 41.

Dried fruits having been ſhifted from baſkets and packages made of articles in Claſs I., or conſidered ſuſceptible, if all the perſons on board are in health may be delivered in twenty days. Order, ſect. 38.

Dried fruits in wood, may be delivered in ten days. Order, ſect. 38.

Oil in barrels, the bungs being tarred, and the barrels bruſhed and dipped in ſea-water, may be delivered in ten days. Order, ſect. 38.

Grain, pulſe, and ſeed in bulk, or in ſacks, or caſks, or mats, when ſhifted, and paſſed through a ſieve, may be delivered in ten days. Order, ſect. 38.

And the packages, when made of ſuſceptible articles, are to be ſent to the lazaret to perform quarantine, according to the nature of them, or be deſtroyed at the option of the owner. Sect. 38.

Formerly the 42d clauſe in the order in council required "the production of a declaration on oath for goods of the 1ſt Claſs," when brought from places without the ſtreights of Gibraltar, or on the continent of America, &c. to aſcertain their growth, and that they were not the produce of Turkey, &c., but that clauſe has been ſuſpended by order of 8th Aug. 1810; and they may be admitted without performing quarantine, on the maſter making oath that no infectious diſorder prevailed at the place from whence they ſailed, or on oath of the importer that they are not the produce of Turkey, or of any place in Africa within the ſtreights, or Weſt Barbary: but whenever that declaration is produced, the oath of the maſter or of the importer is not required. Order in Council, 27th Oct. 1818.

Veſſels having performed quarantine at any of the foreign lazarets, and producing proper documents to prove that fact, are not required to do ſo again: nevertheleſs, ſuch part of the cargo as conſiſts of articles in Claſs I. are to be taken out and perform quarantine in the uſual manner for fifteen days (Order, ſect. 43.) But no goods are to be landed or removed therefrom until the maſter has given notice to the quarantine ſuperintendent, or officer of cuſtoms, in order to be laid before the privy council. Landing or removing them, before directions are given, or contrary thereto, ſubjects the maſter to the penalty of 200*l*. 45 Geo. III. ſect. 22.

Having thus ſtated what ſhips and goods are liable and required to perform quarantine, and the time for which they are to perform it, we ſhall proceed to ſtate the manner of doing it, which is to be by opening and airing in the manner directed by order in council (Act, ſect. 29.), according to the nature of the goods, and the articles of which the packages are made.

Goods of the 1ſt Claſs, unaccompanied with a clean bill of health, undergo two performances, one *probationary*, the other of longer time and greater precaution. The hatches of the veſſel are firſt to be opened, and as many of the bales as can be ranged upon the deck are to be taken from the hold, (as ſoon as the pilot and paſſengers are removed,) and the ends opened, and the contents handled by the ſailors, under directions of a quarantine guardian for ſix days; and after this, any further parcels are only required to be ſo opened and aired for three days, unleſs any ſuſpicious circumſtances ariſe, and then the time may be extended to four, ſix, or eight days, ſo as to complete in the whole twenty-one days, or even a longer time if neceſſary, and then they are to be conveyed to the lazaret. Order, ſect. 32.

In the ſecond performance, or expurgation at the lazaret, all bales of cotton are to be opened from one end to the other, and ſo much removed as admit the handling and removing the remainder. Rags, raw wool, goats' wool, Carmenia wool, and hair, are to be taken out and ranged in heaps of four feet high, and often rummaged. Bales of ſilk to be opened on one ſide, from end to end, the cords looſened, and the ſilk aired for twenty days; then the other ſide to be opened in like manner for five days more. Cottons, yarn, thread, ſtuffs, and linen, are to be piled in rows or pyramids, and turned every four days, and completely ſpread out and ſuſpended on cords for ſeveral days. Paper, books, parchment, ſponges, and ſtockings, are to be unpacked and ſeparated, ſo as to admit thorough airing. Feathers, ſtraw-hats, artificial flowers, coral beads in ſtrings, and bruſhes, ſpread out in the ſame manner. Carpets, furs, hides, and ſkins to be unbaled, and each piece ſpread and ſuſpended on cords in the open air, and frequently turned; and all goods packed with ſtraw, cotton, or articles ſtated in Claſs I., ſhall be entirely taken out of the ſame, opened, and handled, and carefully aired, as well as all other goods in that claſs, for which no directions are given. Order, ſect. 34.

Goods of the 2d Claſs, unaccompanied with clean bills of health, though leſs liable to infection, are to be carried to the lazaret, and be unpacked, opened, and aired as much as poſſible; and by moving them as much as practicable from time to time, ſo as to admit free ventilation for thirty days. Order, ſect. 35 and 36.

Goods not mentioned in thoſe claſſes, and remaining on board the importing ſhip, are to perform quarantine for thirty days, by being frequently ſwept and ſhifted, ſo as to admit a free ventilation; at the end of which time, if all the perſons on board, and thoſe employed in the expurgation on ſhore, are well, the ſhip, goods, crew, and paſſengers, are to be fumigated and diſcharged. Order, ſect. 37.

There are other regulations and enactments on this ſubject which it is neceſſary to notice, and though they relate to the firſt arrival of the ſhips, and take effect from that time, yet being rather regulations to aſcertain the nature of the voyages, and the ſtate of the crews, and the goods compoſing the cargo, than any part of the performance of quarantine, this is conceived a proper place to introduce them.

It is manifeſt, that without the earlieſt information of the arrival of veſſels from countries infected with the plague, &c. and of the kind of goods of which their cargoes are compoſed, many of the above-mentioned ſalutary regulations would be uſeleſs, either by perſons quitting veſſels immediately on their arrival, or from having intercourfe with other fhips, or with the fhore, or by breaking bulk and fending goods into the common ftock of the country. To this end, the law has impofed the neceffity of the mafters of fhips liable to quarantine fhewing proper fignals by day and night, by which the quarantine officer and others are apprized of their arrival; and to prevent any abufe herein, for the purpofe of covering any fmuggling tranfactions, perfons exhibiting them, when not liable to quarantine, are liable to 200*l.* penalty by 45 Geo. III. c. 10. fect. 15. And as perfons, efpecially paffengers, may innocently render themfelves liable to thofe penalties, as well as thofe ftatutes which affect their lives, it is neceffary they fhould be fet out for their information. The feverity that has been annexed to the violation of the quarantine regulations is a fufficient proof how irkfome the conftraint is, and how regardlefs perfons are to the general fafety of others, for nothing fhort of impofing the penalty of death, on a violation of fome of the enactments, has been found fufficient to impofe refpect to the law on this fubject.

By 45 Geo. III. c. 10. fect. 14. fhips fubject to quarantine are required at all times, when they meet any other fhip at fea, or fhall be within four leagues of the Britifh or Irifh coafts, or the iflands of Guernfey, Jerfey, Alderney, Sark, or Man, to have a fignal hoifted, to denote that they are fo liable, which they are to keep hoifted fo long as they remain in fight of fuch fhip, or are within fuch limits of the coaft, until they fhall have arrived at their quarantine port, and been legally difcharged. The fignals are to be, by day, a large yellow flag at the maft-head; for which purpofe, every fhip leaving Great Britain for the Mediterranean, or Weft Barbary, or any place fufpected or liable to have the plague, &c. fhall be provided with one or more quarantine fignal-flags and lanthorns, and proper materials and inftruments for fumigation and immerfion, and fhall keep them on board, to be ufed upon the fhip's return (Order, fect. 45.); and if coming without clean bills of health, then with the addition of a large black fpot in the centre: and by night a lanthorn with a light therein, alfo at the maft-head; on failure whereof, the mafter is fubject to a penalty of 200*l.* (45 Geo. III. c. 10. fect. 14.) Ships actually having the plague on board are to hoift a fignal flag of yellow and black, borne quarterly, of eight breadths of bunting at the main-topmaft-head; and in the night two lanthorns, one over the other, to be kept up when in fight of any other fhip, or within four leagues of the coafts or iflands, and until arrived at the proper quarantine port, and legally difcharged from quarantine, upon penalty of 200*l.* 46 Geo. III. c. 98. fect. 1.

Mafters of fhips are alfo further required by fect. 16. of the act of the 45 Geo. III. to give the pilot who fhall go on board a written paper containing a true account of the places at which they have touched or loaded on the homeward voyage, and any neglect or refufal, or any falfe reprefentation, or wilful omiffion therein, fubjects them to the penalty of 200*l.* And by the 46 Geo. III. c. 98. fect. 2. mafters of fhips that are not liable to quarantine in refpect of the place from whence they come, are alfo to give a true account of all the different articles of their cargoes, under the penalty of 200*l.* And if by proclamation or order in council, fhips are liable, as coming from any place mentioned in any order in council, or by reafon of bringing any goods mentioned in fuch order, the pilot is to give the mafter notice of being liable, fo that he may hoift the proper fignal, under the penalties of 50*l.* and 100*l.* by the 45 Geo. III. c. 10. f. 16. and 46 Geo. III. c. 98. f. 2. Pilots, not conducting fhips to the proper places, (except prevented by ftrefs of weather, adverfe winds, or other accidents,) to forfeit 100*l.* (45 Geo. III. c. 10. f. 17.); and not requiring fuch paper, 100*l.* by 46 Geo. III. c. 98. f. 2.

Mafters knowing any place from which they came, or at which they touched, to be infected with the plague, or any infectious difeafe, or having any perfon on board infected with it, and who fhall refufe or neglect to difclofe the fame when examined by the fuperintendent of quarantine, or officer of cuftoms, and omitting to hoift the proper fignals, fhall be guilty of felony, and fuffer death. 45 Geo. III. c. 10. f. 19.

Mafters of veffels ordered to perform quarantine are to deliver to the officer of cuftoms, or quarantine fuperintendent at the quarantine ftation, (and which they are required to demand,) their bills of health, manifeft, log-book, and journal, under penalty of 100*l.* 45 Geo. III. c. 10. f. 20.

Mafters of fhips liable to quarantine, although the plague, &c. fhall not have then appeared, who fhall quit the fhip, or fuffer any feaman or paffenger to quit the fame, till they have performed quarantine, (unlefs by licence or order in council,) fhall forfeit 500*l.* And if any perfon coming in, (or any pilot or other perfon who may go on board, whether before or after her arrival at any port in Great Britain,) fhall afterwards quit her before fhe fhall be regularly difcharged, all perfons (by neceffary force) may compel fuch perfon to return on board; and every perfon fo quitting fuch fhip fhall forfeit 200*l.* and be imprifoned fix months. 45 Geo. III. c. 10. f. 21.

Such of the paffengers and crew of fhips not furnifhed with clean bills of health as may be defirous of performing quarantine in a feparate veffel, (to be hired at their own expence,) may, if the fuperintendent and medical affiftant fee no objection thereto, do fo, and may quit the fhip before the hatches are opened and go on board fuch fhip, (a guardian being there placed at their expence) for thirty days (Order, fect. 28.); but their baggage, apparel, and books, for which they have not immediate occafion, fhall be fent to a floating lazaret to be aired, and before any paffengers or crew fhall be difcharged, they, their clothes, and effects, fhall be fumigated (Order, fect. 31.); but paffengers and the crews continuing on board the fhip in which they arrived are to remain under quarantine till the fhip be difcharged. Order, fect. 28.

Pilots may quit the fhip and be removed to the hofpital fhip, after the quarantine guardians are placed on board, provided they come from fhips having no fufpicious ficknefs on board; but if otherwife, they are to be fent to the pefthoufe, or other place appointed for perfons fo affected, and they are to continue under quarantine until the probationary airing of the goods is finifhed, when, if they continue well, they are to be fumigated and difcharged. But fuch pilots are not to have communication with any other perfon, except under the regulations ufual in like cafes. Order, fect. 37.

If any peftilential accident occurs among the fhip's crew or paffengers during the probationary airing, (at whatever ftage it may happen,) the quarantine of the crew, paffengers, and pilot, (if any fhall have been on board,) and the goods, is to recommence, and the fick are to be fent to the hofpital, or peft, or place provided for perfons fo afflicted, the external guard to be doubled, and notice immediately given to the privy council. Order, fect. 29.

If any perfon falls ill, and a medical man is on board, he fhall confer with the medical man who comes alongfide, the latter keeping ten feet to windward; but if no medical

man

man is on board, and it is neceſſary to viſit the ſick, the viſit ſhall be made at the ſhip's boat by the medical attendant in his own boat, keeping to windward ten feet; and if medical aid cannot be adminiſtered on board, the ſick is to be carried to the peſt or hoſpital ſhip. Order, ſect. 23.

Perſons under circumſtances to induce a ſuſpicion of having any peſtilential diſorder, to be removed to the peſt or hoſpital ſhip; but if it is not infectious, they may be removed to a more commodious apartment in the lazaret, there to complete the remainder of their quarantine. Order, ſect. 24.

If any peſtilential diſorder ſhall actually diſcover itſelf in any ſhip or lazaret, the perſon is to be removed with all poſſible care and diſpatch, under the ſpecial directions of the ſuperintendent or medical aſſiſtant, to the peſt-houſe, and a proper attendant is to be aſſigned to him, and he ſhall be viſited at a due diſtance; but if a nearer approach is neceſſary, ſome perſon is to be ſpecially appointed for that purpoſe. Order, ſect. 25.

Paſſengers and crews may have the aſſiſtance of any medical perſon they may chooſe from the ſhore; but if any perſons communicate by contact with the ſick, they ſhall perform the like quarantine as the ſick. Order, ſect. 26.

Perſons liable to perform quarantine, and others having had intercourſe with them (whether in ſhips or lazarets), are to be ſubject to the orders of the ſuperintendent or officer of cuſtoms, who are required to enforce obedience to all ſuch orders, and to call in others to their aſſiſtance; and they may compel all ſuch perſons to repair to the lazaret or ſhip, and cauſe all goods liable to quarantine to be conveyed there alſo; and perſons refuſing to go, or, who being there, ſhall eſcape, ſhall be compelled by force to return; and perſons refuſing or neglecting to return, and perſons eſcaping, ſhall ſuffer death without benefit of clergy. (45 Geo. III. c. 10. ſect. 23.) And may be ſeized by any conſtable, headborough, tythingman, or peace officer, or any other perſon, and be carried before a magiſtrate or juſtice of the peace, or ſuch juſtice may iſſue his warrant for their apprehenſion and conveyance to their ſhip, or to any ſhip performing quarantine, or to any lazaret from which they have eſcaped, or for confining them in ſafe cuſtody (but not in a public gaol) under ſuch reſtrictions, as to having communication with other perſons, as the juſtice may think proper, (calling to his aid medical advice) until they can be ſafely removed to ſome place appointed for quarantine, or until directions can be obtained from the privy council. 45 Geo. III. c. 10. ſect. 24.

Perſons not infected with the plague, &c. entering the lazaret whilſt any perſon is performing quarantine, are to perform it alſo, and are not to return without licence or order in council; and, if they ſhall actually eſcape before it has been fully performed, they ſhall ſuffer death, without benefit of clergy. 45 Geo. III. ſ. 27.

Perſons on board ſhip, or in a lazaret, may have communication with others by letter, to be collected by a boat, which is to go round at a fixed hour daily, and they are to be dipped in vinegar and put into the fumigating-box, and the covers ſlit open (Order, ſect. 16.); but letters to perſons on board are to be taken by the quarantine ſuperintendent only, and no conference is to be had by perſons *not* under quarantine with perſons who *are* under quarantine (except by permiſſion of or in the preſence of the quarantine ſuperintendent or his aſſiſtant), nor from any ſhip, unleſs the ſuperintendent's boat be preſent, and then at the diſtance obſerved by the ſuperintendent. And to prevent improper or clandeſtine communication, there is to be a night-watch and row-guard at all the quarantine ſtations; and the boats belonging to any floating-lazaret are to be locked to the ſame; and the boats of the ſhips performing quarantine are to be taken away, and no uſe made of them, but for removing goods, from ſuch ſhip, or upon occaſions of neceſſity, till they are given up when the ſhip has done performing quarantine. Order, ſect. 17.

Aſſiſtance and neceſſaries for ſhips under quarantine to be found by the ſuperintendent and to be carried to the windward ſide, and delivered by means of buckets. (Order, ſect. 18.) Quarantine guardians are to prevent any goods being delivered from ſhips without clean bills of health but by an order in writing from the ſuperintendent, ſuch order to be entered in a book and the original returned; and nothing to be conveyed from one ſhip under quarantine to another, nor any perſonal intercourſe allowed. And a guardian is to go with the lighters and boats, to prevent communication during the tranſit of the cargo, and to take care that no remnants of cotton, or things of Claſs I. and II., remain in them. And before leaving off work they are to collect and deliver all ſuch articles into the lazaret. Sect. 19 of the Order.

The duty of the quarantine ſuperintendent and officers of the cuſtoms may partly be collected from what has gone before; but it is neceſſary here to obſerve, that they are, on a ſhip's arrival, to go off and put the following preliminary queſtions:—What is the name of the ſhip? Maſter? From whence? Where bound? At what port has ſhe touched on the homeward voyage, or what ſhips ſpoken with? Whether the plague, or any infectious diſeaſe, exiſted at the time of leaving the port ſhe loaded at? What kind of goods the cargo is compoſed of, and of what country are they the produce? and whether ſhe brings a bill of health?

If the ſhip is deemed liable to quarantine, ſhe is then to be directed to the proper quarantine port, where, on arrival, the ſuperintendent is to go to the windward ſide, (taking medical advice with him, if neceſſary,) and to ſee all the officers, crew, and other perſons, muſtered on the gangway, and is to put further queſtions to them. They are in ſubſtance the ſame as above, except more particular as to the places the veſſel touched at during the whole voyage; the reſpective dates of her arrival at every place, and dates of her departure; the number and conditions of the crew for the voyage, whether any have been ſick or died, and the nature of the diſeaſe; whether their bedding and clothes were deſtroyed, or any perſon employed about them taken ill; if ſo, when, and what kind of diſeaſe; whether any letters or parcels have been received out of any other ſhip on the paſſage; of what kind and where delivered, and into what veſſel or boat; what pilots ſhe has had; and any particulars reſpecting Britiſh ſhips loading at the ſame port from whence ſhe came; their names; where bound, &c. and what Britiſh ſhips were at the places at which ſhe touched; whether any perſon employed in loading the cargo was taken ill, or any ſuſpicion of the kind; whether the cargo had been long warehouſed, or packed, handled, or brought on board by any perſon affected with the plague: did ſhe touch at the iſle of Rhodes, the Morea, or any and what part of Africa; if ſo, where? and had ſhe any communication with the ſhore at thoſe places, or with any ſhip coming from ſuch places; if ſo, in what manner, and when, and whether the crew of ſuch ſhip was healthy.

The anſwers to all theſe queſtions are to be taken in writing, and the maſter to make oath to them, and is to deliver the log-book, manifeſt, and ſhip's papers, (which are to be dipped in vinegar and fumigated,) and make oath to the truth of the contents of the former, or in what particular it is not correct; and whether any particular entry was

was made ſoon after the fact, and if not, for what reaſon; and alſo to make oath to all the other papers. Sect. 10 of the Order.

If any ſuſpicious circumſtances appear in the anſwers to the above queſtions, or from any other circumſtance, the proper officer is immediately to tranſmit ſuch anſwers to the privy council and the commiſſioners of the cuſtoms, and without regard to the bill of health, whether clean or otherwiſe, is to order ſuch ſhip to a ſtation diſtant from all other veſſels, and put her under ſpecial guard, the more effectually to prevent communication with her. Order, ſect. 11.

Ships coming without clean bills of health are to have two quarantine guardians placed on board as ſoon as the examinations are ended, and ſhe ſhall have arrived at her proper ſtation. Order, ſect. 15.

Guardians are to take care that, after the cargoes are diſcharged into the lazaret, the holds and between decks are completely ſwept, and the ſweepings burnt. (Order, ſect. 20.) And they are to ſearch all lockers and cheſts, &c. of paſſengers and crews, ſo that no goods in Liſt 1 and 2, or any thing liable to infection, remains undelivered, except what the ſuperintendent or medical man declares requiſite for daily uſe; and they are to ſee all ſuch cheſts, clothes, and the bedding of the ſhip daily opened and aired. (Order, ſect. 21.) They are alſo to make daily reports of the ſtate of health of every perſon on board, and whether the regulations are regularly complied with; and, in caſe of any impediment, are to give notice to the maſter, and then to the ſuperintendent, who ſhall remove the ſame. Order, ſect. 22.

Perſons landing or removing any goods, wares, or merchandize, packets, packages, baggage, wearing-apparel, books, or letters, from any ſhip liable to quarantine, or knowingly receiving the ſame, are to forfeit, for every offence, not more than 500*l.*, nor leſs than 100*l.* And perſons clandeſtinely conveying them (or concealing them for that purpoſe) from any ſhip actually performing quarantine, or from the lazaret, are to be adjudged guilty of felony, and ſuffer death without benefit of clergy. Act, ſect. 31.

Officers of cuſtoms, or other perſons embezzling goods, or guilty of any other breach or neglect of duty, in reſpect of the ſhips, perſons, and goods performing quarantine, ſhall loſe their office or employment, and be rendered incapable to hold the ſame, or receive a new grant thereof, and ſhall forfeit 100*l.* And if they ſhall deſert their duty, or wilfully permit any ſhips, perſons, or goods, to depart, or be conveyed out of the lazaret, ſhip, or other place, unleſs by permiſſion under an order in council, and if they, or any perſon authoriſed to grant certificates of ſhips having performed quarantine, ſhall knowingly give a falſe certificate thereof, they ſhall ſuffer death without benefit of clergy; and if they ſhall wilfully damage any goods under their direction, they ſhall pay treble damages and coſts of ſuit to the owner. 45 Geo. III. c. 10. ſect. 26.

Perſons forging, counterfeiting, interlining, or altering, any certificate required by this act, or any order in council touching quarantine, or procuring it to be done, or publiſhing it as true, ſhall ſuffer death without benefit of clergy. 45 Geo. III. c. 10. ſect. 30. and 46 Geo. III. c. 98. ſect. 8.

After goods have been duly opened and aired, proof thereof ſhall be made by the oaths of the maſter of the lazaret or veſſel, and one of the guardians or officer of the cuſtoms, and the ſuperintendent, ſhall give a certificate of ſuch proof having been made, and ſuch goods ſhall not be liable to any further reſtraint, either at that or any other port. 46 Geo. III. c. 98. ſect. 5.

Ships and perſons having performed quarantine, proof is to be made by the oath of the maſter, and of two other perſons belonging to the ſhip, before the principal officer of cuſtoms or juſtice of peace, at the port where quarantine was performed, or, if at the iſlands of Guernſey, &c. before two jurats, that ſuch ſhips or perſons have duly performed quarantine, and that they are free from infection. And, upon producing a certificate from the ſuperintendent to that effect, the collector or juſtice, &c. is required to give a certificate thereof, and thereupon ſuch ſhips and perſons ſhall not be liable to farther reſtraint. 45 Geo. III. c. 10. ſect. 28.

All forfeitures and penalties incurred againſt this act may be recovered in any of his majeſty's courts of record, or by ſuit in any of his majeſty's courts in the iſlands of Guernſey, &c. one half to them who ſhall ſue, and the other to his majeſty, to be applied towards defraying the expences of erecting and maintaining the lazaret. 45 Geo. III. c. 10. ſect. 34.

Actions to be commenced in the name of the attorney-general, or of ſome officer of the cuſtoms, and the former may ſtop proceedings if he thinks proper, as well as to the officer's ſhare as to the king's moiety. Sect. 35 and 36.

Offences againſt this act, not being felony, and diſobedience to any order in council, for which no ſpecific penalty is provided, may be tried before any two juſtices of the peace for the county, riding, &c. where ſuch offence happens; and if any perſon ſhall be convicted he ſhall be liable to ſuch penalty, not exceeding 50*l.* for any one offence, or to ſuch impriſonment, not exceeding three months, as ſhall, in the diſcretion of the two juſtices, be judged proper. Such penalty to be applied as directed by ſect. 34. 45 Geo. III. c. 10. ſect. 38.

Offences contrary to this or any act hereafter to be paſſed, or of any order in council, notified by proclamation, or publiſhed in the Gazette, may be tried in any county within England or Scotland, or in the proper courts in the iſles of Guernſey, &c. No attainder of felony to work corruption of blood or forfeiture of goods, &c. 45 Geo. III. c. 10. ſ. 39 and 42.

In any proſecution for offences againſt this act, or any act which may hereafter be paſſed, concerning quarantine, or for any breach of any order in council notified in the Gazette (which is to be a ſufficient notice by 45 Geo. III. c. 10. ſect. 33.), the anſwer to any queſtions or interrogatories put to the maſter of a ſhip, may be given in evidence as to the place from which ſuch ſhip came, or the places at which ſhe touched in the courſe of the voyage; and where any ſhip ſhall have been directed to perform quarantine, the having been ſo directed ſhall be evidence that ſhe was liable, unleſs ſatisfactory proof ſhall be produced by the defendant that the ſhip did not come from or touch at any ſuch place as is ſtated in the ſaid anſwer; or that ſuch ſhip, although directed to perform quarantine, was not liable. And where any ſhip ſhall in fact have been put, and ſhall actually be performing quarantine, ſuch ſhip ſhall, in any proſecution, be deemed to be liable, without proving in what manner, or from what circumſtances, ſuch veſſel became liable. 46 Geo. III. c. 10. ſect. 40.

By the 43d ſection, offenders may plead the general iſſue, and if the plaintiff is nonſuited, or diſcontinues his action after the defendant has appeared, or if judgment has been given upon any verdict or demurrer againſt the plaintiff, the defendant may recover treble coſts, and have the like remedy at law as the defendant hath in other caſes.

Actions

Actions to be brought within the ſpace of two months after the offence is committed.

Whenever any perſon is charged with an offence againſt this or any other act, or in diſobedience of any order in council concerning quarantine, and the ſame ſhall appear to any judge of the court of King's Bench by affidavit or certificate of an information being filed againſt ſuch perſon, he may iſſue his warrant under his hand and ſeal, and cauſe him to be brought before him or a juſtice of the peace, that he be bound with two ſufficient ſureties to appear and anſwer ſuch offence; and if ſuch perſon ſhall refuſe or neglect to become bound, he may be committed to gaol till he does ſo give bail, or be diſcharged by order of the court of King's Bench. The recognizance to be returned and filed in court, and remain in force until ſuch perſon is acquitted, or until he has received judgment. (Act, ſect. 41.) And if he is detained for want of bail, the proſecutor may cauſe a copy of the indictment to be delivered to him, or the gaoler, &c. with notice thereon indorſed, that if he does not in eight days enter an appearance and a plea of demurrer, an appearance and plea of not guilty will be entered in his name; and upon affidavit being made of ſuch notice, &c. being delivered, the proſecutor may cauſe an appearance and plea of not guilty to be entered, and ſuch proceedings ſhall be had as if the defendant had appeared and pleaded not guilty; and if upon a trial the defendant is acquitted the judge may direct his diſcharge. Act, ſect. 41.

Where any examination or anſwer ſhall be taken on oath, the perſons authoriſed to take ſuch examinations and oath ſhall be deemed to have full powers to adminſter ſuch oath; and if any perſon ſwears falſely, or procures others to do ſo, he ſhall be deemed guilty of perjury or ſubornation of perjury. 45 Geo. III. c. 10. ſect. 37. and 46 Geo. III. c. 98. ſect. 10.

The king may iſſue directions if the plague breaks out in Great Britain.—The lords of the privy council, in caſe any infectious diſeaſe breaks out in Great Britain, or the iſlands of Guernſey, &c. may make ſuch order, and give ſuch directions in order to cut off all communication between any perſon infected, and the reſt of his majeſty's ſubjects as ſhall appear to them expedient for that purpoſe. 45 Geo. III. c. 10. ſect. 12. And if it ſhall happen that any part of Great Britain or Ireland, or the iſles of Guernſey, &c. or France, Spain, Portugal, or the Low Countries, ſhall be affected with the plague or other infectious diſeaſe, his majeſty may by proclamation reſtrain all ſmall boats, and veſſels under 20 tons, from ſailing out of the ports of Great Britain or the iſlands, until bond is given by the maſter, with ſufficient ſureties for 300*l.*, that ſuch veſſel or boat ſhall not go or touch at any place mentioned in ſuch proclamation, and that the maſter, crew, or paſſengers, ſhall not go on board any other ſhip at ſea, nor receive any perſon on board at ſea from any other ſhip, nor receive any goods out of any ſhip. And if any veſſel for which ſuch ſecurity is required, ſhall ſail before ſecurity is given, ſhe ſhall be liable to forfeiture, and the maſter and every mariner ſhall forfeit 20*l.* 45 Geo. III. c. 10. ſect. 32.

By the ſtat. 1 James I. c. 31. if any perſon infected with the plague, or dwelling in any infected houſe, be commanded by the mayor or conſtable, or other head officer of the town or vill, to keep his houſe and ſhall diſobey it, he may be enforced by the watchmen appointed on ſuch occaſions to obey ſuch neceſſary command, and if any hurt enſue the watchmen are thereby indemnified. And further, if ſuch perſon goes abroad and converſes in company, if he has no plague ſore upon him, he ſhall be puniſhed as a vagabond by whipping, and be bound to his good behaviour. But if he has any infectious ſore upon him uncured, he then ſhall be guilty of felony. Blackſtone, vol. iv. c. 13.

Having thus far given the laws and regulations concerning this matter, we ſhall ſtate the duties payable by ſhips performing quarantine, with the exceptions provided by the act; and alſo the beſt methods of fumigating ſhips and houſes. It muſt be apparent, that the nature of the quarantine eſtabliſhments and maintaining lazarets incur conſiderable expences, to defray which the duties are to be applied (Act, ſect. 8.); and the law 45 Geo. III. c. 10. ſect. 3. declares, that it is reaſonable the importers ſhould defray the ſame; and ſect. 6. enacts, that the ſhip-owners may recover of the importers ſuch ſums as the tonnage of their goods ſhall bear to the proportion of the tonnage of the ſhips. Theſe duties are to be paid upon the ſhips clearing inwards, and to be computed according to the 26 Geo. III. c. 60. 45 Geo. III. c. 10. ſect. 5. They are to be levied and recovered as duties of cuſtoms, and although not raiſed for the purpoſe of contributing to the revenue, the amount is to be carried to the conſolidated fund. Sect. 7.

A Table of tonnage duties payable on ſhips and veſſels, which ſhips or veſſels, or the cargo of which, or any part thereof, ſhall have performed quarantine in Great Britain, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man. 45 Geo. III. c. 10. ſ. 3.

	£	*s.*	*d.*
1. For every ſhip which ſhall have arrived from any part of Turkey, or from Africa within the ſtreights of Gibraltar, or in the Weſt Barbary on the Atlantic Ocean, with a clean bill of health, the ton - -	0	7	6
2. Do. without a clean bill of health, the ton	0	15	0
3. For every ſhip which ſhall have arrived from any place whatſoever, (except from any part of Turkey, &c.) with a clean bill of health, the ton - - - - - - -	0	3	0
4. Do. without a clean bill of health, the ton	0	10	0
5. For every ſhip which ſhall arrive with any part of the cargo conſiſting of goods the growth of Turkey, or any place in Africa within the ſtreights, or in the Weſt Barbary, and which ſhall have arrived from any place whatever, the ton - - - - -	0	7	6
6. For every ſhip which ſhall have ſo arrived under ſuch circumſtances as ſhall induce his majeſty, or the lords of the council, to ſubject ſuch ſhip to the like quarantine as ſhips coming from Turkey with clean bills of health, the ton - - - -	0	7	6
7. Ships arriving under ſuch circumſtances as ſhall induce his majeſty to ſubject ſuch ſhip to the like quarantine as ſhips coming from Turkey *without clean bills of health*, the ton	0	15	0
8. For every ſhip which ſhall enter inwards in the port of London, an additional duty of per ton - - - - - - -	0	1	0

Exempted from the ſaid Duties.

Ships of war, tranſports, and other veſſels employed in the ſervice of government.

Ships or veſſels not bound to Great Britain or the iſlands, and having put in in diſtreſs. (Although they ſhould perform quarantine. Opinion of the attorney-general.)

Ships or veſſels obliged to perform quarantine only on account of having goods enumerated in the 1ſt Claſs on board,

board, and not producing the proper declaration or document as to their growth, &c.

Ships or veſſels, with a clean bill of health, in ballaſt, or whoſe cargo ſhall conſiſt wholly of ſalt, (unleſs coming from Turkey, or ſome place in Africa within the ſtreights of Gibraltar, or in the Weſt Barbary.)

Ships and veſſels, which with their cargoes ſhall have performed quarantine in the foreign lazarets, and produce proper documents and vouchers atteſting the ſame. (Or when goods, which have performed quarantine there, and been carried to other countries, are afterwards brought here. Treaſury order.)

Ships and veſſels rendered liable ſolely by reaſon of having received on board by force, and againſt the will of the maſter and crew, any perſon from a veſſel coming from or having touched at an infected place. 46 Geo. III. c. 98. ſect. 4.

Ships which have ſailed in ballaſt from places conſidered liable to infection, and which ſhall afterwards bring a cargo from a placo not deemed liable to infection. Treaſury order.

To prevent as much as poſſible the plea of ignorance of theſe laws, the order in council of 5th April 1805 directs, (ſect. 44.) that the collector of the port where any veſſel ſhall clear out for the Mediterranean or Barbary coaſt, or any other place reſpecting which an order in council is made, ſhall furniſh the maſter with an abſtract of the quarantine regulations, and it is to remain up during the voyage in ſome conſpicuous part of the ſhip till his return, provided he returns in twelve months.

Ships of war which ſhall meet any veſſel liable to quarantine coming to any port in Great Britain, or the iſlands of Guernſey, &c. are to take care to prevent the landing of any goods or perſons, &c. until they ſhall be put under the direction of the quarantine ſuperintendent, &c. (Sect. 46.) And the commanders of ſhips of war, and forts and garriſons on the ſea coaſt, and all juſtices, mayors, ſheriffs, bailiffs, chief magiſtrates, conſtables, headboroughs and tythingmen, &c. ſhall be aiding and aſſiſting to the ſuperintendent of quarantine and his aſſiſtants, and to the officers of the cuſtoms, and in bringing ſuch ſhips to the places appointed for performance of quarantine, as well as in the due performance of the ſame. Order, ſect. 48.

The commiſſioners of the cuſtoms are ordered to uſe their utmoſt vigilance and care that the regulations of the acts of parliament and orders in council be duly obſerved (ſect. 47.); and the lords of the treaſury, the lord high admiral, the lord warden of the cinque ports, and the maſter general and principal officers of the ordinance, his majeſty's ſecretary at war, and the governors and commanders-in-chief of the ſaid iſles of Guernſey, &c. are to give the neceſſary directions herein as to them may reſpectively appertain. Order in council, ſect. 50.

It now remains to ſtate the beſt mode of fumigating veſſels and apartments infected with infectious diſeaſes, and to offer ſuch hints as are applicable to the ſubject.

Odoriferous woods, gums, ſweet herbs, and aromatics, have been recommended as fumigations, but with little certainty as to their effects; perfumes ſtill leſs ſo; beſides which, they rather conceal the mal-aria than correct contagion. The evaporation of common vinegar by heat is often employed as a fumigation, but it is not poſſeſſed of much power of diminiſhing the fetid odour of putrid air. The acetic acid or radical vinegar is better; its powers are however limited to a ſmall ſpace, and therefore, though it may be uſeful about the perſons of thoſe who attend the ſick, it is inadequate to the purification of large rooms.

The ſtronger and better fumigations are the nitrous or marine acid, and the oxymuriatic acid vapour, the former of which is made thus: half an ounce of nitre reduced to powder and vitriolic acid (oil of vitriol) in equal quantities, mixed in ſmall pots, and placed in various parts of the room.

Oxymuriatic acid, which is moſt powerful, is prepared thus:

Manganeſe - - - -	2 parts.
Common ſalt - - -	4 parts.
Vitriolic acid, ſpecific gravity 1.85	3 parts.
Water - - - - -	1 part.

To a ſmall quantity of the mixture of the manganeſe and ſalt, (ſuppoſe three ounces,) the whole of the water is to be added, (half an ounce,) and to this, in a pot large enough to prevent the ebullition from flowing over, add the vitriolic acid from time to time. This will keep up for twenty-four hours a diſcharge of the oxygenated muriatic acid, of which the ſmell is not unpleaſant, and the vapour gives no annoyance to either the ſick or the attendants.

Where houſes or hoſpitals are highly infected with the plague, it will be neceſſary for them to undergo a ſtronger fumigation of ſulphur, but that being attended with danger ſhould only be done by perſons properly acquainted with the manner of doing it; they ſhould afterwards be white-waſhed, and the floors well ſcoured.

It may be ſtated once for all, that the great object of quarantine laws is the ſeparating of thoſe affected, or ſuſpected to be infected with an infectious diſtemper, from thoſe who are not, and nothing would be ſo ſalutary or abſolutely neceſſary, wherever the plague breaks out, as inſtantly ſeparating of the ſick from thoſe who are well; and this is beſt done by removing them to a proper place, rather than ſuffering them to remain with their family, which too frequently by that means becomes infected alſo.

Whatever is requiſite to be done by way of *fumigation* will be found at large under that head; the following precautions are, however, proper to be known.

The clothes of the ſick ſhould at all times, when changed, be removed by tongs, and not by handling, and ſhould be put into cold water and boiled for an hour, and afterwards be well waſhed in waſhing machines, and then fumigated; or they may be baked in an oven; but the ſafer mode would be to have them deſtroyed, eſpecially if not valuable.

Thoſe who attend about the perſon of the ſick, as well as the medical men, ſhould remain as ſhort a ſpace of time as is conſiſtent with their duty, and to avoid as much as poſſible all contact with his perſon or his bedding, clothes, &c. And they might be furniſhed with gloves made of oiled ſilk, as well as dreſſes made of the ſame article. The cup or glaſs out of which he drinks ſhould be immediately plunged into water or vinegar, as well as any article he touches or uſes. Whatever he leaves of his meals ſhould be burnt or wholly deſtroyed. The excrementitious diſcharges ſhould alſo be received into cold water, and inſtantly removed out of the room. If the ſick die, he ſhould be immediately wrapped in oiled cloth or a tarpaulin, and be ſpeedily buried at the depth of ſix or ſeven feet; which ſhould be performed, without buſtle, in the night time, without toll of bell, to prevent the alarming of others.

With reſpect to the bed and bedding upon which the ſick has died, it would be beſt to have it burnt immediately; at all events, it muſt on no account be uſed till it has been baked in an oven for twelve hours (being rolled up and removed in a cart with every poſſible care, that it be as little handled as poſſible). It ſhould be afterwards expoſed to the open air for at leaſt fourteen days before it is again uſed.

Furniture

Furniture confifting of chairs, bedfteads, &c. fhould be fcoured and fumigated with fulphur and faw-duft for twenty-four hours, firft removing every perfon out of the apartment, as no living creature can exift in the fumes for any length of time.

Houfes and apartments fhould be fumigated in like manner, and be afterwards purified by the admiffion of as much air as is practicable, and alfo by fcraping and wafhing the walls with lime-water, and the floors with plenty of cold water.

And laftly, we cannot inculcate too much the fact, that the beft preventive of infectious difeafe, and the fureft mode of diminifhing the effects of its contagion, is by the free admiffion of pure air, even in the room of the fick, who, to admit of its free circulation, fhould not have bed or window curtains, and by the greateft attention to cleanlinefs. By the removal of the reft of the inhabitants from the fick houfe to a place of obfervation, for the fpace of twenty days, and by the fick being alfo confined for an equal length of time, having perfons appointed to prevent his efcape, and to have a nurfe affigned to him. Articles neceffary for his fupport muft be delivered by means of bafkets or planks, as well as thofe received from the houfe, and all money received in payment to be dipped in vinegar.

Large affemblies fhould not be permitted to meet while towns are infected, and the theatres, churches, and markets fhould be clofed; and if thefe precautions are ftrictly adhered to, we are confident that if the contagion cannot be wholly prevented, its fpreading may be greatly confined, and its malignity confiderably leffened.

QUARTZ. See Quartz, and Mineralogy, *Addenda.*

QUASSIN, in *Chemiftry*, the name which has been given to a bitter fubftance extracted from quaffia. See Bitter *Principle.*

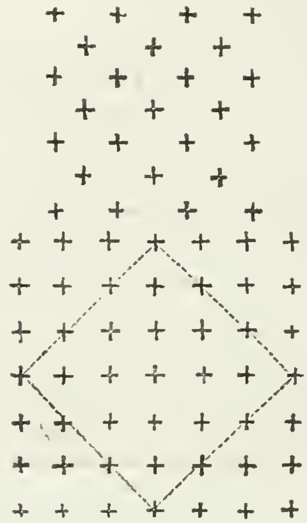
QUEEN Anne's. Add—It contains 16,648 inhabitants, of whom 6381 were flaves in 1810.

QUEMAKO, a townfhip of Somerfet county, in Pennfylvania, having 1392 inhabitants.

QUERCITRON. See Quercus *Tinctoria*, and Printing *on Calico.*

QUILOA. At the clofe, add—An ifland of Quiloa was vifited by captain Beaver in 1812. He defcribes this ifland, which has been the feat of royal refidence, fince the foundation of the kingdom, at leaft 700 years, as being about fix miles long and three broad; low and fertile, extending longitudinally acrofs the mouth of a deep bay, having at either end an opening for two arms of the fea, and thus containing a peninfula which projects from the main land, forms two fafe and magnificent harbours, capable of containing, in perfect fecurity, the largeft fleets. Of the ancient fplendour and magnificence that fubfifted when the Portuguefe firft vifited this ifland, not a veftige remains. The prefent city, if it deferves the name, confifts of a number of fcattered huts from the borders of the fea to the fhore. Here captain Beaver found the deputy of the Imam of Mufcat, who controuls the miferable Moors or Arabs who are in poffeffion of the fea-coaft, with his half a dozen of foldiers, fituated in a round tower, mounting three guns, which pointed directly to the king's houfe, and at the diftance of a mufket-fhot from it. By thefe means, he keeps the king of the extenfive kingdom of Quiloa in awe, and levies a tribute in flaves, ivory, gold-duft, and many other articles exported from this part of the coaft. The Moorifh king is only the nominal fovereign both of the iflands and of the fhores of the continent.

QUINCUNX, l. 21, add—The notion, however prevalent, that plants thus fet have greater fcope than when fet at the fame diftance without alternation, is perfectly imaginary: thus below it is evident, that the *fquare mode* becomes a quincunx when viewed angularly, and the quincunx, in like manner, becomes a fquare; and the diftance of the plants is the fame in both.



QUINTAL, col. 2, l. 3, add—The Caftilian quintal is divided into 4 arrobas, or 100 lbs.; the lb. into 2 marcs, or 16 oz.; the marc into 8 drachmas, 16 adarmes, or 576 grains. The merchants commonly reckon 100 lbs. Caftilian weight equal to 102 lbs. avoirdupois; but the more accurate proportion is as 123 to 125.

QUIRA, or Quiria, in *Geography*, a province of the ancient kingdom of Colchos enclofed by the end of the Moffian hills. It is a pleafant and fruitful country, and, from the ruins that ftill remain, we may conclude, that it was formerly flourifhing and populous in an extraordinary degree. The refidence of the prince of Quiria is Titi-zighi or Ighina (the ancient Pityus), fituated on the fhores of the Black fea, with a fecure and fpacious harbour. The only confiderable river of Quiria is the Boas, which rifes 30 verfts from Titi-zighi, and after a courfe from E. to W. empties itfelf into the Black fea.

QUIRILIA, the only river of confequence in Immertia, or, as it is now called, Iberia. It rifes in the Soanni ridges and being increafed by the fnow-ftreams which defcend from the Georgian fide of the Caucafus, enters the Phafis, in the neighbourhood of Cotatis.

R.

RACOON, in *Geography*, a townſhip of Gallia county, in Ohio, having 295 inhabitants.

RADIATION *of Heat*, a property of heat or circumſtance belonging to it, which has been lately inveſtigated and ſucceſsfully illuſtrated by profeſſor Leſlie of Edinburgh. There are two modes in which heat is diſcharged from bodies. A portion is communicated to the contiguous matter, and is ſlowly diffuſed through it. Another portion, when the body is placed in an aërial medium, is diſcharged with rapidity, darts through the air to a diſtance, and even at that diſtance, when intercepted, produces a heating effect. This forms what is called the "radiation of heat." Mr. Leſlie has diſcovered the important fact, that different kinds of matter, at the ſame temperature, diſcharge very different quantities of heat by radiation. From a metallic ſurface, the quantity is comparatively ſmall; from a vitreous ſurface, it is much greater; and it is ſtill more ſo from a rough ſpongy ſurface.

The power of different ſurfaces in diſcharging different portions of heat, in this mode, at the ſame temperature, Mr. Leſlie aſcribes to the more or leſs cloſe contact which they admit with the external air; a vitreous ſurface, for example, admitting of a cloſer proximity of the air than a metallic ſurface does, and thereby communicating to it, in a given time, a larger portion of heat. And on the ſame principle he explains the fact, that thoſe ſurfaces which are moſt powerful in thus diſcharging heat, are alſo moſt powerful in arreſting and abſorbing it; the cloſer contact into which the heated air comes with the ſurface on which it impinges, favouring the transfer of its heat; while a ſurface, to which the heated air does not approach ſo cloſely, will in a great meaſure reflect it with little loſs of heat. Hence the diſcharging and abſorbing power are proportional to each other; while the reflecting power is the reverſe.

Some important practical applications reſulting from theſe differences are ſuggeſted by the author.

A veſſel with a bright metallic ſurface is the beſt fitted to preſerve liquors either long warm, or as a conſervatory to keep them cool. A ſilver pot will emit ſcarcely half as much heat as one of porcelain; and even the very ſlighteſt varniſhing of gold, platina, or ſilver, which communicates to the ware a certain metallic gloſs, renders this new kind of manufacture about one-third part more retentive of heat. The addition of a covering of flannel, though indeed a ſlow conductor, far from checking the diſſipation of heat, has directly the contrary tendency; for it preſents to the atmoſphere a ſurface of much greater propulſive energy, which it would require a thickneſs of not fewer than three folds of this looſe ſubſtance fully to counterbalance. The cylinder of the ſteam-engine has lately been moſt advantageouſly ſheathed with poliſhed copper.

The progreſs of cooling is yet more retarded, by ſurrounding the heated veſſel, on all ſides, at the diſtance of near an inch, with a caſe of planiſhed tin; and the addition of other caſes, following at like intervals, augments continually the effect. With an obſtruction of one caſe, the rate of refrigeration is three times ſlower, with two caſes it is five times ſlower, with three caſes it is ſeven times ſlower, and ſo forth, as expreſſed by the ſucceſſion of the odd numbers. By multiplying the metallic caſes, therefore, and diſpoſing them like a neſt at regular intervals, the innermoſt could be made to retain the ſame temperature with little variation for many hours or even days. Such an apparatus would obviouſly be well calculated for various culinary and domeſtic purpoſes.

In the conveyance of heat by means of ſteam, the ſurface of the conducting tubes ſhould have a metallic luſtre. On the contrary, if it be intended by that mode to warm an apartment, they ſhould be coated on the outſide with ſoft paint, to facilitate their diſcharge of heat. For the ſame reaſon, metallic pots are more eaſily heated on the fire, after their bottoms have become tarniſhed or ſmoked. If a bright ſurface of metal be ſlightly furrowed or divided by fine flutings, it will emit heat ſenſibly faſter, becauſe the prominent ridges, thus brought cloſer to the general atmoſpheric boundary, will excite the pulſations with augmented energy.

For the experiments which led to this diſcovery, and the concluſions deduced from it, we refer to his "Eſſay on Heat," and to a "Short Account of Experiments and Inſtruments depending on the Relations of Air to Heat and Moiſture." 8vo. Edinb. 1814. See HEAT. See alſo DEW, RAYS *of Heat*, and REFRANGIBILITY *of Radiant Heat*.

RADNOR, in *Geography*, a townſhip of Ohio, in Delaware county, having 547 perſons.

RAJAPOOT, denotes literally the ſon of a king, and is uſed as the name of a warlike race of Hindoos.

RAIN. For Inverary *r.* Inverarie.

RAIN-GAGE, l. 4, for LXIV. *r.* XVI.; for *fig.* 2. *r.* 10.

RALEGH, col. 5, l. 20, *r.* 1601.

RAM *of M. Montgolfier*. Add—See WATER.

RAMA, or RAMAH. Add—This was a common name applied to many places in the Holy Land: and it is ſuggeſted (ſee Clarke's Travels, vol. iv. p. 432.), that the modern village of Bethoor and the modern Rama are the places

places mentioned by St. Jerom, where he fays, " Rama et Bethoron et reliquæ urbes nobiles a Salomone conftructæ parvi viculi demonftrantur :" Rama was a village in the time of Jerom, and the fituation of Bethoor is diftinctly marked in the Apocrypha, with reference to the plain of Rama. (1 Maccab. iii. 16. 24.) (However, the prophecy of Jeremiah (xxxi. 15.) applied by St. Matthew (ii. 17.) to the murder of the Innocents by Herod is not believed to refer to the place now mentioned, but to another Rama, noticed by Eufebius.) The origin of Rama has been afcribed to the Moflems under Soliman, fon of Abdolmelic, who is ftated to have built the town with materials from the ruins of Lydda, diftant three miles from Rama. But that this is an error may be evinced by reference to the writings of St. Jerom; who fpeaks of its vicinity to Lydda, and calls it Arimathea, from a prevalent opinion that it was the native place of Jofeph, who buried our Saviour. Jerom's teftimony, preceding the Mahometan conqueft of the country, is fufficient to prove that the city exifted anterior to the invafion of Paleftine by the Moflems. Neverthelefs it is poffible that Rama, from having been a fmall village, might have become a large town under their dominion: nor does there feem much reafon to doubt, that this Rama was the village mentioned with Bethoron by St. Jerom, as the only remains of the two cities fo named, which were built by Solomon. According to Reland, the oldeft writer who mentions Rama is Bernard the monk, who vifited the Holy Land in the 9th century. Oriental geographers defcribe it as the metropolis of Paleftine; and it is faid that St. George, the tutelar faint of our anceftors in England, fuffered martyrdom in this place; though others fay, that his relics repofed in a magnificent temple at Lydda or Diofpolis. Its diftance from Jerufalem, ufually eftimated at a day's journey, is defcribed as equal to 36 or 37 miles by Phocas; who diftinguifhes Armathem, the native place of the prophet Samuel, from Ramola or Rama, with which Adrichomius feems to have confounded it; and places the church of St. George within the latter city; which pofition, although difputed by Reland and other authors, not only feems to coincide with the teftimony given from the Alexiad of Anna Comnena, but alfo with the evidence afforded by Bernard the monk, who mentions a monaftery of St. George near to Ramula. There is not a part of the Holy Land more fertile than the plain around Rama; it refembles a continual garden; but cultivation had been neglected at the time of the arrival of Dr. Clark, the traveller now cited, owing to the dreadful plague with which the whole country had been infefted. Rama and Lydda were the two firft cities of the Holy Land that fell into the hands of the Chriftians when the army of the Crufaders arrived. Rama was then in its greateft fplendour; a fenced city, abounding in all the luxuries of the Eaft. It was exceedingly populous, and was adorned with ftately buildings, and well fortified with walls and towers. The count of Flanders having been difpatched by the princes and generals of the Chriftian army, with five hundred cavalry, to reconnoitre the place, and to fummon the city to furrender, found the gates open: the inhabitants, alarmed by the fudden approach of fo powerful an army, had abandoned their dwellings and all their property during the preceding night. In confequence of this, a general rendezvous of the Chriftian forces took place in Rama, where they remained during three entire days, regaling themfelves in the abundance the place afforded. During this time, Robert of Normandy was elected bifhop of Rama and Lydda, to which bifhopric all the revenues of the two cities and their dependencies were annexed; the whole army joining in thankfgiving to St. George the Martyr, the patron faint of Diofpolis and Rama, to whom the aufpicious commencement of the enterprife was attributed. Hence probably originates the peculiar confideration in which St. George was held by the inhabitants of England, during the early periods of its hiftory.

RAMSBURY. By the returns of 1811, the parifh of Ramfbury contained 398 houfes, and 2095 perfons; *viz.* 1028 males, and 1067 females: 248 families being employed in agriculture, and 85 in trade, manufactures, and handicraft.

RAMSDAL, *dele.*

RANDOLPH. Add—In 1810, their number was 1170; l. 3 of next article, infert—including 798 flaves.

RANDOLPH, a county of the Illinois (*dele* Indiana) territory, containing four townfhips; *viz.* Kafkafkia, United States' Saline, Shawanee, and the refidue of Randolph county, and 12,282 inhabitants, including 168 flaves.—Alfo, a townfhip of Montgomery county, in Ohio, containing 936 inhabitants.

RAPIDES. Add—This is one of the beft tracts in Louifiana. No town, except Alexandria, on the right bank of the Red river, has been found, (fays Mr. Darby, 1816,) in the parifh of Rapides. This place is a thriving little village, and ftanding at the head of conftant boat navigation, is of confiderable commercial importance. The ftaples of the parifh are, cotton, timber, beef, pork, and maize; the four firft being the principal.

RATE, l. 8, for Ireland *r.* India; in Ireland fix, legal intereft charged by all private banks, though the intereft charged by the bank of Ireland for money advanced is 5 *per cent.*

RATE *of a Ship*, &c. col. 2, l. 39, add—About ten years ago, an additional lieutenant was appointed to the line of battle fhips. Ships of 50 and 38 guns have four lieutenants: l. 5 from bottom, after lieutenants, infert—fhips of 20 guns, and all fhips upon the eftablifhment of floops of war, have two lieutenants. Col. 3, l. 14, add—See SHIP.

RATÉ *of Ships of War*, add—By an order of council, the operation of which commenced Jan. 1, 1817, the following regulations were fixed with regard to rates in the navy; *viz.*

1ft rate. All three deckers.
2d rate. All of 80 guns, and upwards, on two decks.
3d rate. All of 70, and under 80 guns.
4th rate. All of 50, and under 70 guns.
5th rate. All of 36, and under 50 guns.
6th rate. All of 24, and under 36 guns.
1ft rate, 900, 850, and 800 men.
2d rate, 700 or 650 men.
3d rate, 650 or 600 men.
4th rate, 450 or 350 men.
5th rate, 300 or 280 men.
6th rate, 175, 145, or 125 men.

RAVA, in *Geography*, a town of the Perfian empire, in the pachalic of Bagdad, fituated between Kerkefia (the Roman *Circefium*) and Annah (the Amatho of Ammianus Marcellinus), and confifting of about 200 ftone houfes in the midft of extenfive ruins. On the oppofite fide of the river are the remains of a caftle, erected on the fummit of a rock.

RAYUN, a town of Perfia, in the province of Kerman, which, like Tchroot and Mahim, is furrounded by numerous gardens.

READING, a townfhip of Fairfield county, in Ohio, having 789 inhabitants.

REALIZE, *r.* REALISE, or REALIZE.

RED ANTIMONY-ORE. See MINERALOGY, *Addenda.*

REDSTONE. Add—the townfhip fituated in Fayette county contains 1224 inhabitants.

REEL. See MANUFACTURE *of Cotton.*

REFRACTION, col. 14, l. 40, for fign *r.* fine.

REFRIGERATION. The following laws have been deduced by MM. Dulong and Petit from their experiments on the cooling of bodies. See HEAT.

1. If the cooling of a body in a vacuum furrounded by a medium whofe temperature is conftant could be obferved, the velocity of cooling would decreafe in a geometrical progreffion, while its temperature would decreafe in an arithmetical progreffion.

2. When the temperature of the medium furrounding a vacuum remains conftant, the velocity of cooling for excefs of temperature in arithmetical progreffion decreafes as the terms of a geometrical progreffion diminifhed by a conftant number. The ratio of this geometrical progreffion is the fame for all bodies, and is equal to 1.0077.

3. The velocity of cooling of a body in a vacuum for a conftant excefs of temperature increafes in a geometrical progreffion, the temperature of the furrounding medium increafing in an arithmetical progreffion. The ratio of that progreffion is ftill 1.0077 for all bodies.

4. The velocity of cooling arifing from the fimple contact of a gas is entirely independent of the nature of the furface of a body.

5. The velocity of cooling arifing from the fimple contact of a fluid varies in a geometrical progreffion, the excefs of temperature varying at the fame time in a geometrical progreffion. If the ratio of this fecond progreffion be 2, that of the firft is 2.35, whatever may be the nature of the gas or its elafticity.

This law may be alfo expreffed by faying that the quantity of heat removed by a gas is in every cafe proportional to the excefs of temperature of a body raifed to the power of 1.233.

6. The cooling power of an elaftic fluid diminifhes in a geometrical progreffion, while the tenfion diminifhes in a geometrical progreffion. If the ratio of this fecond progreffion be 2, the ratio of the firft is 1.366 for air, 1.301 for hydrogen, 1.431 for carbonic acid, and 1.415 for olefiant gas.

This law may be alfo expreffed in the following manner. The cooling power of a gas, *cæteris paribus*, is proportional to a certain power of the preffure. The exponent of that power is 0.45 for air, 0.315 for hydrogen, 0.517 for carbonic acid, and 0.501 for olefiant gas.

7. The cooling power of a gas varies with its temperature in fuch a manner, that if this gas can be dilated and be made to preferve the fame elaftic force, the cooling power will be as much leffened by the rarefaction of the gas as it is increafed by the heating of it; hence the cooling power of a gas depends in a definite manner upon its tenfion.

REMONTOIR, col. 3, l. 15 and 23, for I *r.* L. Col. 9, l. 14, for balance *r.* balance-wheel; l. 26 and 29, for *i* r. *l.*

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RESPIRATION, col. 15, l. 21 from bottom, after inches *r. per* minute.

REVENUE. The ftatement of the revenue of Great Britain, for the laft four years, appears in the following table.

	1815.	1816.	1817.	1818.
Cuftoms - - -	10,487,522	8,380,721	9,761,481	9,996,226
Excife - - -	26,562,432	22,868,196	19,726,297	22,894,450
Stamps - - -	5,865,413	5,969,721	6,127,421	6,391,270
Poft Office - -	1,548,000	1,426,000	1,338,000	1,339,000
Affeffed Taxes - -	6,214,987	5,783,322	6,127,529	6,217,594
Land Tax - -	1,799,993	1,127,929	1,163,320	1,209,682
Mifcellaneous - -	366,867	241,199	492,872	368,099
Penfion, &c. - -	16	4,016	—	—
	52,125,230	45,801,104	44,946,920	48,416,321

REVOLUTION, *French.* At the clofe, add—On the 4th of June 1814, the king (Louis XVIII.) came to the two chambers to make a declaration of the conftitutional charter; and on the occafion delivered a fpeech diftinguifhed by its dignity and propriety. On the 1ft of March 1815, however, Buonaparte, having efcaped from Elba, landed in France, and by rapid and uninterrupted marches haftened to Paris, and refumed his power, March 22, 1815, but his fate was finally determined by the battle of Waterloo; and he made his fecond abdication, in favour of his fon, on the 23d of June 1815; and on the 8th of the following month, the foreign troops entered the capital. Difappointed in his views of fettling either in America or in England, he furrendered himfelf, with a fuite of forty perfons, to captain Maitland of the Bellerophon, July 15, 1815; and at Torbay he was transferred to the Northumberland, which conveyed him to the ifland of St. Helena, decreed by the allied fovereigns to be the place of his future abode. Here he arrived Oct. 16, 1815. Upon his departure from Paris, Louis XVIII. was again reftored and fixed by the allied powers on the throne of France.

With refpect to the events that have occurred fince this article was written, fuch as the famous battle of Waterloo (fee WATERLOO), the total defeat of Buonaparte, his depofition from the government, his removal from the capital, his confinement in the ifland of St. Helena, the re-eftablifhment of Louis XVIII., the withdrawment of the allied troops, and the meafures adopted for the fecure and permanent fovereignty of France, under the prefent dynafty; they are fo recent, and our limits are fo reftricted, that we muft refer the reader to documents eafy of accefs for a minute detail and more ample information.

REUSSITE. See MINERALOGY, *Addenda.*

RHEA, in *Geography*, a county of Eaft Tenneffee, containing 2504 inhabitants.

RHODE Island. Add—See United States.

RHUMB, col. 2, l. 20 from the bottom, for right angles *r.* equal angles.

RICCIO, Domenico, called *Brusa-Sorci*, in *Biography*, an eminent painter, was born at Verona in 1494, and became a disciple of Giovanni Francesco Caroto, under whose instruction in design and colouring he laid the foundation of his subsequent celebrity. For further improvement he studied the works of Giorgione and Titian at Venice; and his proficiency was such, that his works have been generally admired and sought after, on account of the beauty of his colouring and the attitudes of his figures. Under the patronage of cardinal Gonzaga, by whom he was invited to Mantua, he became a competitor in the exercise of his art with two of the most celebrated masters of his time, Paolo Veronese and Paolo Farimato. In the church of St. George at Verona is a picture by Riccio, which represents the gathering of the manna in the wilderness, and which is accounted a fine composition, and distinguished by the force of its colouring. This master died in 1567, at the age of 73 years.

RICE, *Chemical Composition of.* Braconnot has lately analysed this grain: according to his experiments, 100 parts consist of

	Carolina Rice.	Piedmont Rice.
Water	5.00	7.00
Starch	85.07	83.80
Parenchyma	4.80	4.80
Vegeto-animal matter	3.60	3.60
Uncrystallizable sugar	0.29	0.05
Gummy matter, approaching starch	0.71	0.10
Oil	0.20	0.25
Phosphate of lime	0.33	0.40
	100	100

RICHBOROUGH. The parish of Ash, in which this hamlet is situated, contained, in 1811, 334 houses, and 1685 persons; *viz.* 868 males, and 817 females.

RICHFIELD, a township of Geauga county, in Ohio, having 329 persons.

RICHLAND, l. 4, add—It contains 9027 persons, of whom 5238 were slaves in 1810. At the close, add—Also, a township of Belmont county, in Ohio, having 2831 persons.—Also, a township of Clinton county, in Ohio, having 783 inhabitants.—Also, a township of Fairfield county, in Ohio, having 881 inhabitants.—Also, a township of Guernsey county, in Ohio, having 227 inhabitants.

RICHMOND, in America, col. 2, l. 27, add—of whom 3178 were slaves in 1810; l. 54, add—of whom, in 1810, 2115 in the county, and 1321 in the town of Augusta were slaves. At the close, add—Also, a township of Kentucky, in Madison county, having 366 inhabitants, including 102 slaves.

RINSING, an operation in calico-printing, for an account of which, as well as of *damping*, see Printing, *Calico.*

RIO, &c. col. 2, l. 15, *r.* Helen.

RIOT, l. 20, after pillory, insert—(now abolished).

RIVERHEAD, in *Geography*, a village, or liberty, in the parish of Seven-Oaks, and county of Kent, which, in 1811, contained 184 houses, and 1012 persons; *viz.* 474 males, and 538 females.

ROAD, col. 23, l. 11 from the bottom, *r.* 1^a, 1^r, 32^p, and 22 yards; l. 9, for 6300 *r.* 7272; l. 7, for 255,150*l.* *r.* 294,516*l.*

ROANE. Add—of whom 670 were slaves in 1810.

ROARING, a disease of horses, well known to jockies and dealers in these animals. It takes its name from a singular noise which the horse makes in breathing whenever he is put into a brisk motion. It usually accompanies broken wind, or at least is the forerunner of it. Mr. Ryding says, that it is owing to the extravasation of lymph, and its coagulation on the inside of the trachea, or wind-pipe, which thus obstructs respiration: and if this account of it be just, it seems to resemble the *croup* in children. The principal cause is sudden or violent and long-continued exercise. At its commencement, blistering the whole length of the wind-pipe may be of use; but when the disease continues for a length of time, it becomes incurable.

ROBERTSON, in *Geography*, a county of West Tennessee, containing 7270 inhabitants, of whom 1608 were slaves in 1810.

ROBESON, l. 3, add—of whom 1340 were slaves in 1810.

ROCKBRIDGE, l. 4, add—of whom 1724 were slaves in 1810.

ROCKCASTLE. Add—of whom 163 were slaves in 1810.

ROCK-CRYSTAL. See Mineralogy, *Addenda.*

ROCKDALE, in *Geography*, a township of Crawford county, in Pennsylvania, having 401 inhabitants.

ROCKINGHAM, l. 17, add—of whom the slaves in 1810 were 2114; l. 23, add—of whom 1491 were slaves.

ROCKLAND, a township of Berks county, in Pennsylvania, having 1026 inhabitants.

ROMANO, Giulio, l. 14 from bottom, for sagacious *r.* salacious.

ROME, in *Geography*, a post-town of the district of Maine, in the county of Kennebeck, with 585 inhabitants.

ROMILLY, Sir Samuel, *Knight*, in *Biography*, no less distinguished as a patriot and philanthropist, than for his legal knowledge and practice, has every claim which pre-eminent talents and character can give him to honourable notice in those biographical sketches which this work contains. Descended from a race of ancestors, whose attachment to civil and religious liberty constrained them to sacrifice their property, to abandon their native land, and to seek an asylum from persecution in this country, it was reserved for him to maintain and perpetuate the honour of the family from which he derived his origin. Of his family and its emigration, it will be sufficient to transcribe the following account given by himself in an address to the citizens of Bristol, when they invited him to become a candidate for representing them in parliament. "It has been published in this city that I am a foreigner, and that if you elect me, you will send a foreigner to represent you in a British parliament. Gentlemen, I was born and educated, and have passed my whole life in England, with the exception of a short interval, which was spent in visiting foreign countries. My father too was born and educated in England, and spent his whole life in it; my grandfather, it is true, was not an Englishman by birth, but he was an Englishman by choice. He was born the heir to a considerable landed estate at Montpellier, in the south of France. His ancestors had early imbibed and adopted the principles and doctrines of the reformed religion, and he had been educated himself in that religious faith. He had the misfortune to live soon after the time when the edict of Nantz, the great toleration act of the Protestants of France, was revoked by Louis XIV., and he found himself exposed to all the vexations and persecutions of a bigoted and tyrannical government, for worshipping God in the manner which he believed was most acceptable to him. He determined to free himself from this bondage; he abandoned his property, he tore himself from his connections, and sought an asylum in this land of liberty,

where

where he had to fupport himfelf only by his own exertions. He himfelf embarked in trade; he educated his fons to ufeful trades; and he was contented at his death to leave them, inftead of his original patrimony, no other inheritance than the habits of induftry he had given them; the example of his own virtuous life; an hereditary deteftation of tyranny and injuftice; and an ardent zeal in the caufe of civil and religious freedom. To him I owe it, among other ineftimable bleffings, that I am an Englifhman. Gentlemen, this is my origin; and I truft that I need not blufh to own it."

The father of fir Samuel was an eminent jeweller, and realized a handfome fortune; his mother, whofe maiden name was Garnault, was defcended from a family of French refugees; and he being the youngeft of nine children, of whom three only attained to maturity, was born in Frith-ftreet, Soho, in the city of Weftminfter, on the 1ft of March, 1757.

In early life he manifefted thofe powers of the underftanding, and thofe affections of the heart, which, under proper direction and affiduous culture, augured his future advancement to eminence of ftation and character. "He was remarkable," fays one of his biographers, "for the benevolence of his difpofition, his deep and generous fenfibility, his high fenfe of honour, the quicknefs of his apprehenfion, and the extraordinary maturity of his judgment;" combining "great vivacity and a conftant flow of animal fpirits, with a powerful imagination, a retentive memory, and the ftrongeft and moft durable affections; he poffeffed a correct tafte in literature and the fine arts, and retained through life a keen relifh for the beauties of nature." It was his good fortune, at an early age, to form an intimacy with the Rev. Mr. Roget, a young gentleman refembling himfelf in tafte and difpofition, and afterwards his brother-in-law; to whom he was much indebted, as he himfelf had the modefty and gratitude to acknowledge, for giving direction to his talents, and a fteady impulfe to his exertions.

Thus liberally endowed by nature, and aided by the counfel of an intelligent and affectionate friend, he overcame a variety of obftacles which prefented themfelves in the way of his progrefs and advancement; and having chofen the profeffion of the law for the exercife of his talents, he foon exhibited thofe powers and that perfevering application, which, without the advantages of a patrimonial eftate, and an education at a public fchool or univerfity, enfured his future eminence. Having enrolled his name in one of the Inns of Court, and previoufly acquired fome notion of bufinefs in the "Six-Clerks' Office," connected with the court to which he directed his views, he was called to the bar in 1783; and from the reputation he gained as an "equity draughtfman," he foon rofe to the higher departments of his profeffion. Upon the removal of Thurlow, Scott, and Mitford, from the chancery court, Mr. R. became a leader, and was retained in almoft every caufe. "His indefatigable induftry, his unwearied patience, his comprehenfive acutenefs, his deep knowledge of the law, his correct notions of the practice of the court, were all calculated to give due weight to arguments felected with fkill, propounded with modefty, and enforced by a chaftened eloquence."

Raifed to an independence by his own exertions, it was natural for a perfon of his difpofition to feek a domeftic eftablifhment; and accordingly in the fummer of 1797, whilft he was upon a vifit at the feat of the marquefs of Lanfdowne, he met with a daughter of Francis Garbett, efq. of Knill-Court, in the county of Hereford; a young lady, whofe youth and beauty and other amiable qualities engaged his affection, and determined his choice; and to whom he was married in the following year. This connection opened to his views the profpect of a growing family, and of courfe induced him to apply to the bufinefs of his profeffion with additional ardour and affiduity. Accordingly when Mr. Fox and lord Grenville affumed the reins of government in the year 1806, he was nominated folicitor-general, after fome fufpenfe about committing to his cuftody the great feal, and received the honour of knighthood.

It is recorded to the honour of fir Samuel, as well as to that of his colleague fir Arthur Pigott, the attorney-general, that, though the prefs, according to the language of lord Chatham, was become, during their time, a "chartered libertine," and political contention had arrived at its height, yet with a kind of triumph over all provocations which affailed the adminiftration of this period, no profecution for libel occurred. Indeed, the mind of fir Samuel was occupied about a much higher object, which was the reform of the Englifh fyftem of jurifprudence. His firft attempt with this view was an amendment of the bankrupt laws, and though he did not fucceed to the extent of his wifhes, fo as to render the freehold eftates of perfons liable to the bankrupt laws, who might die indebted, affets for the payment of their fimple-contract debts, for which he was allowed to bring a bill into the houfe of commons in 1807, which bill was loft on a divifion; he neverthelefs obtained an act by means of which the debts of traders have been more effectually fecured, for the benefit of the public. About this time he acted as a manager at the trial of the late vifcount Melville, for high crimes and mifdemeanors in his office as treafurer of the navy, which terminated in an acquittal. On occafion of the abolition of the flave trade, which conferred immortal honour on this fhort-lived adminiftration, fir Samuel delivered a fpeech which made great impreffion on the houfe: and it is faid that one paffage of it, which he uttered with an uncommon degree of animation, was honoured by three diftinct plaudits. On the difmiffal of the miniftry, of which he formed fo diftinguifhing a part, he vindicated and applauded their conduct, during the year of their exiftence; expreffing in terms of cordial approbation their decifive meafures with regard to the abolition of the flave-trade, and the emancipation of Ireland, as well as their refufal to give the king a pledge not to renew the Roman Catholic queftion; and deprecating the return of lord Melville to office, notwithftanding his acquittal, as no one had moved for refcinding the vote againft him.

The attention of fir Samuel, both in and out of office, was much occupied concerning the ftate of our criminal code, and the adoption of meafures for reforming it. He lamented, in common with many other enlightened patriots, that the lofs of life fhould be annexed to a greater variety of actions in England than in any other country in the world, and that criminals of very different defcriptions fhould be fubject, by the adminiftration of our laws, to the fame kind and degree of punifhment. To rectify this anomaly in our jurifprudence appeared to fir Samuel Romilly to be an object of great importance, in its connection, both with the equity and humanity of legiflation, and the prevention of crimes. Accordingly on the 18th of May 1808, he moved for leave to bring in a bill for the repeal of certain objectionable laws; and in this bill he introduced a claufe for granting compenfation to perfons who were unjuftly accufed and tried. He foon after publifhed a pamphlet, intitled "Obfervations on the Criminal Law of England, as it relates to capital Punifhments, and to the Mode in which it is adminiftered." In this pamphlet, which paffed through three editions, he explained his views, and purfued his refutation of the theory of Dr. Paley. "The certainty of punifhment,"

ment," ſays this excellent writer, "is much more efficacious than any ſeverity of example for the prevention of crimes. So evident is the truth of this maxim, that if it were poſſible that puniſhment, as the conſequence of guilt, could be reduced to an abſolute certainty, a very ſlight penalty would be ſufficient to prevent almoſt every ſpecies of crime, except thoſe which ariſe from ſudden guſts of ungovernable paſſion. If the reſtoration of the property ſtolen, and only a few weeks', or even a few days' impriſonment, were the unavoidable conſequence of theft, no theft would ever be committed."

Sir Samuel, having actively concurred in the abolition of the ſlave-trade, could not forbear expreſſing his indignation, when the houſe of commons, in the year 1814, took into conſideration that article in the treaty of peace which allowed of the proſecution of the ſlave-trade for a period of five years, and when he found that the miniſters of this country had acceded to any convention, in which this was a prominent ſtipulation. "If," ſays the biographer whoſe article we are citing, "the king of France has relaxed on his part, and declared the trade in human beings to be annihilated, ſo far as concerns his own dominions, it is to ſir Samuel Romilly, and thoſe who ſupported him on this occaſion, that we are to attribute the change."

The ſubject of this memoir ſoon afterwards diſtinguiſhed himſelf by his oppoſition to the appointment of a new judge and tribunal for facilitating public buſineſs and alleviating the labours of the lord-chancellor. This he conſidered and repreſented as an innovation, from which neither the chancellor, nor the ſuitors of his court, nor the public in general, would eventually derive any advantage. In a pamphlet under the title of "Objections to the Project of creating a Vice-chancellor of England," he announced to the public his opinions on this ſubject, "the general reſult of which was, that the new diviſion of chancery into two courts, and the creation of an intermediate court of appeal between it and the houſe of lords, would tend greatly to enhance the expence of ſuits 'already grievouſly and oppreſſively high,' to multiply the buſineſs of the court, and to protract the final deciſion of cauſes." "The remedy," he adds, "my lord, which I have to propoſe, is a very ſimple one, but I am much afraid, conſidering the force of ſeveral expreſſions which I find ſcattered in your lordſhip's pamphlet, that you will think me diſreſpectful even in mentioning it. You have, however, really left me no choice. You have impoſed upon me the neceſſity of being deficient in what you will think due reſpect, in order to avoid the reproach of being deficient in what you have made my duty. The remedy, then, my lord, ſeems to be, *That the houſe of lords, like all inferior tribunals, ſhould, when they are preſſed with an unuſual quantity of buſineſs, ſit on a greater number of days and at unuſual hours, in order to diſpatch it.*" His laſt, and as ſome have thought his beſt ſpeech, was delivered, at the cloſe of the laſt parliament, againſt the "Alien-bill;" and ſo powerful were his arguments, that, on his ſuggeſtion, the amendments introduced by the lords were thrown out. In this ſpeech, the eloquent ſenator details and reprobates the meaſures adopted and purſued by the parliament juſt expiring, and he cloſes with the following reflection: "who our ſucceſſors may be I know not; but God grant that this country may never ſee another parliament ſo regardleſs of the liberties and rights of the people, and of the principles of general juſtice, as this parliament has been!" However the political opinions of perſons may differ, they muſt concur in admiring the integrity and ardour of the ſpeaker; and conſidering it as the laſt ſpeech which he ever delivered in the national ſenate, the peruſal of it cannot be otherwiſe than awful and impreſſive.

No man ever devoted his time and talents to important and uſeful purpoſes with greater aſſiduity and zeal than ſir Samuel Romilly. His profeſſional practice, which was very extenſive, demanded a great portion of his time and attention; and yet whenever the public intereſt required his attendance in the houſe, he never abſented himſelf on account of any perſonal engagements. His practice and his parliamentary duties occupied the whole of the day from the morning dawn frequently till midnight; and his publications were the productions of thoſe hours that ought to have been devoted to reſt and ſleep. It is not at all ſurpriſing that talents like his, and ſo employed, ſhould command general notice and reſpect. In a former parliament many enlightened and reſpectable members of the city of Briſtol directed their views to him, and wiſhed for ſuch a repreſentative; but other intereſts prevailed againſt his abilities and character, and the influence of his friends. At the laſt general election, he was propoſed as a fit repreſentative for Weſtminſter, his native city; and he was choſen in the moſt honourable manner, without trouble, expence, and ſolicitation, by a decided majority, and amidſt the applauſes of an immenſe body of electors. But a circumſtance occurred which rendered the cloſing period of his life gloomy and diſtreſſing, and which diſappointed the expectations of his conſtituents. Lady Romilly, to whom he was affectionately attached, and with whom he had enjoyed a high degree of connubial felicity, had been for ſome time in a ſtate of declining health, and his mind was agitated by very diſquieting and depreſſing apprehenſions on her account. During their reſidence at their country-houſe at Tanhurſt, in Surry, in Auguſt 1818, her complaint ſeems to have abated, and with the flattering hope that her convaleſcence would be confirmed by the mild air of the Iſle of Wight, they accepted an invitation from Mr. and Mrs. Naſh, to ſpend the remainder of the vacation at their hoſpitable caſtle at Eaſt Cowes, whither they removed in the month of September. Here lady Romilly's diſorder recurred with circumſtances of peculiar aggravation; and Dr. Roget, the nephew of ſir Samuel, was ſummoned to her relief. Her complaint, however, was irremediable; and after various fluctuations, which excited alternate hope and alarm, ſhe died of a dropſy in the cheſt, in the night of the 29th of October. During the progreſs of her diſorder to its fatal termination, ſir Samuel's mind was kept in a ſtate of conſtant ſuſpenſe and anxiety, until at length his ſympathy with the amiable ſufferer and an apprehenſion of the uncertain iſſue of her complaint, diſordered his whole frame, deprived him of ſleep or ſcared him with frightful dreams; and it is ſaid, that on one occaſion, after having been in a ſtate of great diſtreſs, he intimated to a friend, that he felt a burning ſenſation in his head; and this ſeems to have been the only occaſion on which he made a complaint of this kind. Alarmed about himſelf, he ſought relief, and tried a variety of medicines without any permanent effect. "He frequently expreſſed his ſurpriſe, that his want of ſleep did not interfere with his bodily health, that his appetite and digeſtion continued in full vigour, that no indication of fever exiſted, and that he felt no uneaſy ſenſation in his head. In converſing with Dr. Roget and Mr. Dumont he dwelt much on this apparent anomaly, and drew from it the moſt ominous preſage, as to the probability of its ending in inſanity—an apprehenſion which unfortunately took deep root in his mind. Although in all other reſpects he was perfectly in poſſeſſion of his faculties, yet on this ſubject his imagination

tion was certainly difordered, and we may trace, in the intenfity of this dread, the incipient ftage of mental derangement. A ftriking inftance of this feeling appears in one of the teftamentary papers written by him about this time, in which he gave particular directions as to the management of his property, the care of his children, and the cuftody of his perfon and eftate, in the event of his becoming a lunatic. It may be remarked alfo, that the circumftance of his lofing fight, in a great meafure, of the primary caufe of his grief, and of fixing his attention fo much upon his own feelings, was fo oppofite to his natural difpofition, as in itfelf to conftitute a ftrong feature of aberration." Other circumftances, which occurred on his interviews with his friends, confirm the fame obfervation.

On the morning after lady Romilly's death, when Dr. Roget informed him of the event, he received the intelligence with calmnefs and refignation, and without any effufion of grief; and prepared to quit the fcene of his forrows at the fuggeftion of his friends without hefitation or demur. At Murrel-green, where they lodged in their way to London, we learn from Dr. Roget, who paffed the night in the fame room with him, that, although he was in general reftlefs, yet, at intervals, he enjoyed tranquil fleep: nor did he betray, at any period, the fmalleft fign of impatience or irritability. As he approached London, however, on the following day, his agitation increafed, and he once complained to his daughter that his head was difturbed. After his arrival at his own houfe in town, he ate his dinner with his ufual appetite; he then fent for Dr. Marcet, who inquired particularly concerning the ftate of his head, and was informed by fir Samuel, "that he had no head-ache, nor any uneafy fenfation whatever in his head." "The fymptoms prefent were thofe of a high degree of nervous irritation, unaccompanied by fever or any inflammatory action; but they were of a nature to excite confiderable alarm as to the ftate of his mind. Though he refrained from giving vent to his feelings, it was evident, from his manner and from the expreffions which dropped from him, that he defpaired of his recovery, in fpite of every endeavour to infpire him with hope and comfort." To the ufe of all means that were recommended for allaying his extreme irritation he objected; alleging, "that he muft neceffarily pafs a wretched night, and that if he were to ufe any medical prefcription, it would only have the effect of taking away all his confidence in the powers of medicine."

During the greateft part of the night, Dr. Roget, who flept in the fame room, reports that he was perfectly tranquil and apparently afleep; though in the morning fir Samuel affured him, that he had never, for an inftant, dropped afleep.

The next morning the reftleffnefs returned, and was attended with fymptoms of fever; the tongue became white during the night, and the pulfe at one time rofe to 130 in a minute. Upon confulting Dr. Marcet, it was propofed, at his fuggeftion, to apply ice to the head, and to have recourfe to cupping; but before thefe meafures were adopted, Dr. Babington was fent for, and before he arrived the excitement had fubfided, and fir Samuel was much relieved by a copious perfpiration. Upon confultation it was agreed, that the meafures propofed by Dr. Marcet, in exifting circumftances, would not be expedient; and other medicines of an active nature were prefcribed. Thefe were taken by fir Samuel without reluctance; and he continued tranquil and apparently afleep till about two o'clock. His daughter remained at the fide of his bed, who obferved upon his awaking, that he became reftlefs and agitated. Upon being afked whether Dr. Roget fhould be called, he replied in the negative; but upon a fecond inquiry, he faintly affented. During the fhort interval of Mifs Romilly's abfence, a fudden paroxyfm had feized him, hurried him from the bed, and armed his hand againft his own life. The razor with which he had inflicted the fatal wound was in his hand when Dr. Roget entered his apartment. Before he expired, as his biographer proceeds in the relation of the melancholy cataftrophe, he made figns that he wifhed to write, but though fupplied with pen and ink, nothing intelligible could be collected from his attempts. He then defifted from making them, and joining his hands, appeared, from the movements of his lips and eyes, to be abforbed in fervent prayer. It is hardly neceffary to ftate, that the jury fummoned on the coroner's inqueft brought in a verdict, "that the deceafed had deftroyed himfelf in a ftate of temporary mental derangement."

Sir Samuel and his lady were interred at the fame time, in the fame grave, at Knill, the feat of her anceftors, in Herefordfhire. The funeral, agreeably to the inftructions of his will, was private; being attended only by his neareft relations and moft intimate friends. Six fons and one daughter furvived to lament the irreparable lofs which they fuftained. The calamitous event, which thus awfully terminated the life of fir Samuel Romilly on the 2d of November, 1818, in the 62d year of his age, made a deep impreffion, not only in the circle of his family and friends, but through the country in general. So highly was he refpected and efteemed, that, on this melancholy occafion, "the folicitors fufpended their practice; the counfel abandoned the courts; while the judge forfook the bench, after he had fhed a torrent of tears!" The following fingular circumftance is mentioned by his biographer, *viz.* that in the parifh church of St. Bride, Fleet-ftreet, there is a fimple undecorated tablet placed againft the wall, with an infcription on it to the memory of Mr. Ifaac Romilly, F.R.S., who was the uncle of fir Samuel, and who died in 1759 *of a broken heart*, feven days after the deceafe of a beloved wife. For the materials and authentic documents that have furnifhed this article, we refer to the "Annual Biography and Obituary for the Year 1819," vol. iii.

ROMNEY, in *Geography*, a town of Grafton county, in New Hampfhire, containing 765 inhabitants.

ROOFS, in *Rural Economy*. Add—Roofs of iron have lately been introduced with advantage. Mr. T. Pearfall of Bath has conftructed feveral in the neighbourhood of Briftol and London: and on a comparifon of a roof of this kind with that of timber, he obferves, that the iron-roof is fixed on the walls *complete* for the covering; that the ftrength and durability of the iron muft be allowed to be fuperior to thofe of wood; and that the prevention of fire fhould not be forgotten. By his ftatement, the whole expence of fuch a roof, erected over a brick-kiln near Briftol, 29 feet 3 inches in length, and 18 feet 6 inches in fpan, appears to have been 18*l.* 6*s.* 11*d.*

ROSAMOND, col. 2, l. 17, *r.* if it cannot be, &c.

ROSS, in Ohio, l. 1, *r.* 16. Add—Alfo, a townfhip of Butler county, in Ohio, having 1321 inhabitants.

ROSSO *of Florence*, in *Biography*, called by the French *Maître Roux*, was born in 1496, and without regular tuition arrived at a confiderable degree of eminence in the art of painting. The works of Michael Angelo were his favourite ftudies, whofe ftyle he endeavoured to imitate without fervilely following it. Hurried away by a lively imagination and great command of the pencil, he could not attach himfelf to the ftudy of nature, or the antique, fo fteadily as he ought; hence, though his works exhibit great brilliancy of invention,

invention, grandeur in their maffes, gaiety of colour, and tafte in the management of the draperies, they are frequently wild and extravagant in compofition and effect.

He exhibited his talents early in life, and painted when very young a large picture of the Affumption of the Virgin for the church of La Nunciata at Florence, which was diftinguifhed by the novelty and intrepidity of its ftyle. He painted feveral other pictures there, and then went to Rome, where reputation had already forerun him. In that city, he painted an altar-piece for S. Maria della Pace, and the Decollation of St. John for the church of St. Salviati. He remained there till it was facked in 1527, and then fled to Votterra, where he painted a fine picture for the oratorio of St. Carlo. He went afterwards to Venice, and there painted for Aretin his celebrated picture of Mars and Venus; but not being fufficiently employed in Italy, he accepted an invitation from Francis I. of France, who then emulated the character of an encourager of art and fcience. By this munificent monarch, Roffo was employed both as an architect and painter, and the building and decoration of the palace of Fontainbleau were intrufted to his care, and he was gratified with a handfome penfion, and lived in affluence and efteem, as he was not only an able artift, but a man of literary acquirements, and of polifhed and agreeable manners.

The unhappy termination of the life of Roffo affords a leffon to thofe whofe minds are inclined to indulge fufpicious fenfations. He had lived in friendfhip with one Francefco Pellegrini, a Florentine painter, who was in the habit of vifiting him occafionally. Soon after one of his vifits Roffo's houfe was robbed of a confiderable fum, and he rafhly fufpected Pellegrini to be the thief. He accufed and profecuted him, but he having endured examination and the torture, to which he was cruelly put to extort confeffion without any fign of guilt, was declared innocent. As foon as he was releafed, the unfortunate Florentine publifhed a juft and fevere ftatement of his cafe, and appealed for juftice; to this Roffo had nothing to plead, and to avoid the infamy and remorfe to which the injuftice he had been guilty of muft neceffarily fubject him, he put an end to his exiftence by poifon in 1541, at the age of 45. The greater part of his paintings at Fontainbleau was deftroyed by his rival and fucceffor Primaticcio, to make room for his own productions.

ROSS-SHIRE, col. 2, l. 2, for 13,280 *r.* 12,829; and after inhabitants, add—*viz.* 27,640 males, and 33,213 females: 7490 families being employed in agriculture, and 2499 in trade, manufactures, and handicraft.

ROSTRATA. See WHALE.

ROT, DRY, l. 2, add—See BOLETUS. Col. 7, at the clofe, add—Mr. Robert M'William, in a valuable "Effay on the Origin and Operation of the Dry-Rot, with a View to its Prevention or Cure; to which are annexed, Suggeftions on the Cultivation of Foreft-Trees, and an Abftract of the feveral Foreft Laws, from the Reign of Canute to the prefent Time," 4to. 1818, has demonftratively fhewn, that the common practice of felling oak in the fpring is an error which ought to be avoided; and that the feafoning of timber is not lefs important as a means of preventing this difeafe. This ingenious author confiders fungi as a *proximate* caufe of the dry-rot; and as to the origin of fungus, he knows of no found argument againft its having been created, like other vegetables, at the beginning of all things. After many inveftigations and refearches, the caufe of vitality has not been fatisfactorily afcertained. Dr. Darwin, in his Speculations on the Origin of Microfcopic Beings, adopted the incomprehenfible doctrine, that their vitality is fpontaneous. Buffon, Reaumur, Prieftley, Ellis, Ingenhouz, and many others, have been bewildered in their conjectures and hypothefes refpecting this fubject. After all, whether the parents of microfcopic beings, animal and vegetable, exift univerfally and invifibly in the atmofphere, according to Dr. Prieftley's theory; or whether their vitality be fpontaneous, according to the hypothefis of Dr. Darwin, we muft admit the fact, that nature fuffers no fit recipient for animal or vegetable life to remain void; that microfcopic beings of both kingdoms are always ready to feize on every thing which can afford them fubfiftence; and that fungi find an appropriate nidus in difeafed and decayed vegetable matter, more particularly if it continues in a ftate of moifture and warmth; whence the wood-work and walls of vaults are ufually covered with mouldinefs or mucor. It has been maintained by writers on this fubject, as well as by our author, that fermentation always takes place in the vegetable matter deftroyed, previoufly to the appearance of the fungus; but as all fap-wood, whenever felled and employed either in a green or feafoned ftate, contains a greater or fmaller quantity of faccharine matter, this matter, under certain degrees of continued warmth and moifture, is difpofed to run into fermentation. In the procefs of putrefaction, carbonic acid gas and hydrogen gas are evolved in great abundance; and as carbon and hydrogen are effential conftituents in the pabulum of plants (whatever may be the *origin* of their vitality), we thus obtain fome knowledge of their mode of fupport. To deprive thefe noxious fungi of the means of fubfiftence is the great defideratum in the prevention or cure of the dry-rot. Of the fungi which attach themfelves to buildings, Mr. M'William enumerates the following; *viz.* mucor or mould, boletus lachrymans, agaricus coriaceus, A. domefticus, and an agaricus refembling Mr. Sowerby's A. bulbofus. Thefe fungi are eafily propagated either by feed or root; the latter fhooting in various directions will lay hold of timber, and penetrate into its fiffures or creeks. In preparing cement for buildings, thefe vegetable fubftances fhould be carefully excluded; as they are fometimes brought with the fcrapings of public roads, fometimes in the water from ftagnant pools, which contain myriads of feeds that are capable of germination, and only require a favourable temperature to ftart into life; and whoever confiders the facility with which fungi are generated, it feems furprifing that any building fhould be exempt from the ravages of the dry-rot, rather than that fome fhould be attacked by it. Warmth, moifture, and air, are acceffary to the germination and fupport of fungi; but a redundancy of any of the three, according to the prefent author, will deftroy the equilibrium on which their action depends, and the dry-rot will ceafe till that is reftored, when the difeafe refumes its activity. The range of temperature within the limits of which fungi will vegetate is prodigious. The dry-rot will proceed rapidly at 80°, as is evident from the circumftance of fhips returning from tropical climates, almoft covered with fungi; at 90°, 100°, 110°, its progrefs becomes more and more flow, and at 120° it will in general be arrefted; but Mr. M'William thinks, that no degree of heat *fhort of combuftion* will deftroy, though it may fufpend, its corrupting influence. In defcending the fcale of the thermometer, it is found that the dry-rot proceeds very faft at 50°, more flowly at 40°, and is only fufpended at 32°: for no degree of cold with which we are acquainted will deftroy the corrupting principle, and prevent its return after the temperature has been raifed to 45° or 50°. Hence it is obvious, that the application of mere local and artificial heat can be of little or no avail. The great remedy, or preventive, on which Mr. M'William principally relies is, in accordance with the general theory, the free circulation

culation of atmofpheric air, and the application of heat may be ufeful as an auxiliary in promoting fuch a circulation. He obferves, that even atmofpheric air itfelf muft be applied with fome difcretion: for if in its paffage through any part of a building which is damp and already affected it fhould become impregnated with noxious gafes, and be charged with any of the volatile feeds of fungi, it may do more harm than good. It is neceffary, therefore, *in limine*, to remove the infected materials, the difcovery of which requires a penetrating eye.

Water is likewife a powerful agent in preventing and remedying the ravages of the rot; and many inftances have occurred that prove the antifeptic properties of water acting on wood entirely fubmerfed in it. But when water is applied as a fubftitute for air in cellars, vaults, &c. care muft be taken that it does not ftagnate, but flow regularly through the drains; in which cafe it will carry off with it much of the carbonic acid gas, which is fo effential a pabulum to fungi.

The charring of timber is of very ancient ufe, and againft external infection is an admirable prefervative; but when the principles of decompofition are within, it is of very little advantage in refifting them. Paint, when the timber is properly feafoned and dry, is likewife very beneficial. For other interefting particulars relating to this fubject, we muft refer to the author's Effay.

ROVING. See MANUFACTURE *of Cotton*.

ROUM. For KALA *r*. KELA.

ROWEN. Add—of whom 3757 were flaves in 1810.

ROXBURGHSHIRE, l. 23, for 6518 *r*. 6423; after inhabitants, add—*viz*. 17,113 males, and 20,117 females: 3763 families being employed in agriculture, and 2487 in trade, manufactures, or handicraft.

RUBY, SPINEL. See MINERALOGY, *Addenda*.

RUDGELEY. In 1811, the parifh contained 453 houfes, and 2213 perfons; *viz*. 1089 males, and 1124 females: 101 families being employed in agriculture, and 277 in trade, manufactures, and handicraft.

RUMFORD, l. 1, for Cumberland *r*. Oxford. Add—It has 629 inhabitants.

RUSCOMB MANOR, a townfhip of Berks county, in Pennfylvania, having 932 inhabitants.

RUTHERFORD. Add—of whom 979 were flaves in 1810. Add—Alfo, a county of Weft Tenneffee, having 10,265 inhabitants, of whom 2701 were flaves in 1810.

RUTILE. See MINERALOGY, *Addenda*.

RUTLAND, in America, l. 7, *r*. 17 townfhips.

RYE, *Chemical Compofition of*. This grain has been analyfed by Einhoff; according to whom 100 parts of good rye-meal confift of

Albumen	3.27
Gluten not dried	9.48
Mucilage	11.09
Starch	61.09
Saccharine matter	3.27
Hufk	6.38
Lofs	5.42
	100

According to the fame chemift, 100 parts of good rye-feed yield

Hufk	24.21
Moifture	10.15
Pure meal	65.64
	100

S.

SABINE, in *Geography*, a river of Louifiana, being a temporary boundary between the United States and the Spanifh internal provinces, and part of the permanent weftern limits of the ftate of Louifiana. This river difcharges itfelf into the gulf of Mexico, in N. lat. 29° 23′ and W. long. 93° 57′, or 10° 57′ W. from Wafhington city. The depth of water at its mouth is not more than four feet on the bar in ordinary tides. This river about 12 miles from its mouth expands into a wide fhallow lake, 10 or 12 miles wide and 25 long, with a bearing N.E. and S.W. At the extremity of this lake, it receives both the Sabine and Netchez. A line of fea-fhell banks is formed along the fhore of the lake between the two rivers, and on the point on the left fhore of the Sabine, an increafed mount of thefe fhells is found, covered with dwarf trees. About 15 or 20 miles above the lake, wood prefents itfelf in larger bodies, and the wood rifes by a flow gradation; and as we advance the woods inclofe the river on both banks, the ftream becoming contracted to the width of 150 yards, and fo continuing with little variation as high as the Alabama villages, where it fhrinks to 70 or 80 yards in breadth, and it preferves this breadth to N. lat. 32°. The fource of the Sabine has not yet been precifely afcertained; nor have any fettlements of civilized people, a fingle family excepted, been yet made on the Sabine. The weftern branch of the Sabine is called *Netchez;* which fee.

SACLACTIC ACID, in *Chemiftry*. This acid has been recently analyfed both by Gay Luffac and Thenard, and by by Berzelius. According to thefe chemifts, it is compofed of

	Gay Luffac and Thenard.	Berzelius.
Hydrogen	3.62	5.105
Carbon	33.69	33.430
Oxygen	62.69	61.465
	100	100

Which coincide nearly with 5 atoms hydrogen + 6 atoms carbon + 8 atoms oxygen; according to which, the weight of its atom will be 131.25.

SACO, in *Geography*, a town of Maine, in the county of York, having 2492 inhabitants.

SADDLE River. Add—Alfo, a townfhip, containing 2174 inhabitants.

SADSBURY. Add—Alfo, a townfhip of Lancafter county, in Pennfylvania, having 843 inhabitants.—Alfo, a townfhip in Crawford county, in the fame ftate, having 540 inhabitants.

SAHLITE. See SAHLITE, and MINERALOGY, *Addenda*.

SAL SEDATIVUS, &c. add—after *Sedative* SALT, under SALTS.

SALEM, l. 9, add—This county contains nine townfhips, and 12,761 inhabitants, including 29 flaves in 1810; l. 24, *r.* 12,693; l. 52, for two *r.* three; l. 54, add—and a third in Mercer county, having 470 inhabitants.

SALEM, *New*, a town of Hampfhire county, in Maffachufetts, containing 2107 inhabitants.

SALEM, *Weft*, a townfhip of Mercer county, in Pennfylvania, having 660 inhabitants. Col. 2, l. 5, add—SALEM, in Belmont county, Ohio, contains 374.—SALEM, in Champaign county, 1021.—SALEM, in Columbiana county, 839. —SALEM, in Jefferfon county, 912.—SALEM, in Tufkarawa county, 442.—SALEM, in Geauga county, 334.— SALEM, in Wafhington county, 248 inhabitants.

SALFORD. Add—the upper contains 838, and the lower 558 inhabitants.

SALINE, a townfhip of Gallia county, in Ohio, having 262 inhabitants.

SALINES. Add—This town appears from the entrance into Salines bay covered with that white fog, fo much dreaded, and fo well known in Italy by the name of *mal-aria*. Whenever this phenomenon occurs, the heat upon the ifland is exceffive. Salines, and the towns fituated on the E. and N.E. coafts of the ifland, are fubject to fuch dangerous temperature, that in the months of June and July, perfons fall victims to the afflicting malady called by the French Coup de Soleil (a fun-ftroke), if they venture out at noon without an umbrella. The great heat experienced upon the eaftern coafts of Cyprus is owing to two caufes: to the fituation of the ifland with refpect to the Syrian, Arabian, and Lybian deferts; and to its mountainous nature, preventing the cooler winds, the weft and north-weft, from the low fhores to the eaft and north-eaft. See CYPRUS.

SALISBURY, a townfhip of Gallia county, in Ohio, containing 460 inhabitants.

SALIVA, *Chemical Compofition of*. According to the experiments of Berzelius, 1000 parts of human faliva confift of

Water	992.9
Peculiar animal matter	2.9
Mucus	1.4
Alkaline muriates	1.7
Lactate of foda and animal matter	.9
Pure foda	.2
	1000

The peculiar animal matter is foluble in water, infoluble in alcohol, and is precipitated by fubacetate of lead. Hence it appears to be a fpecies of mucus. What Berzelius has termed *mucus*, Dr. Boftock and Dr. Thomfon appear to confider as coagulated albumen.

SALMO ALPINUS. Dr. Shaw fuggefts, that this is the gilt charr of Pennant, and the next fpecies or Salvelinus is his red charr. TAIMEN, l. *penult*. *r.* $3\frac{1}{2}$ feet. KUNDSCHA, l. 3, *r.* 2 or 3. LAVARETUS, add—See GWINIAD. Dr. Shaw fuppofed that the gwiniad of Pennant is the S. WARTMANNI; *r.* LEUCICTHYS. EDENTULUS, or toothlefs, filvery-olive, falmon, with compreffed yellow head, lanceolate red fins, and forked tail: a native of Surinam, where it is highly efteemed as food; *r.* ANASTOMUS.

SALT, col. 3, l. 31, *r. fhivery* for *fifhery*. Col. 4, l. 7, *r. fhivery* for *fifhery*.

SALT, *Laws relating to*, col. 7, l. 20, add—Mr. Parkes informs us, that he has made inquiry of one of the moft confiderable falt-importers, who informs him, that they pay only 5*s.* 8*d.* city-duty on the cargo, whether it be five tons or fifty tons of the falt imported.

SALTS, *Supertartrate of Potafh*, l. 8, infert—See TARTRATE.

SALTS, in *Chemiftry*. It may be proper to obferve here, that a large proportion of the numbers reprefenting the weights of the atoms of bodies given under our article SALTS in the Cyclopædia require correction; for which purpofe we refer our readers to the tables appended to ATOMIC *Theory*, and to the different articles in the *Addenda*, where they will find the moft recent determinations.

SALT *Creek*, in *Geography*, a townfhip of Mufkingum county, in Ohio, containing 389 inhabitants.—Alfo, a townfhip of Pickaway county, in Ohio, containing 810 inhabitants.

SALT-*Lick Town*, l. 1, add—in the county of Pennfylvania, having 994 inhabitants.

SAMI, col. 2, l. 24 from bottom, for fiction *r.* friction.

SANBORNTOWN, l. 2, *r.* Strafford.

SANDERSFIELD, a town of Berkfhire county, in Maffachufetts, containing 1648 inhabitants.

SANDHURST, near Bagfhot, in Hampfhire.—The royal military college, part of which is now eftablifhed at Sandhurft, confifts of a *fenior* and *junior* department. The *fenior* department was eftablifhed at High Wycombe, in the year 1799, (but has recently been removed to Farnham, in Surrey) for the purpofe of inftructing officers in the fcientific parts of their profeffion, with a view of enabling them better to difcharge their duty when acting in the command of their regiments, and at the fame time qualify them for being employed in the quarter-mafter and adjutant-general's department.

No officer can be admitted into this department until he has completed the twenty-firft year of his age, and actually ferved with his regiment as a commiffioned officer for three years abroad, or four years at home. Applications for admiffion muft be made to the governor through the colonel or commanding officer of the regiment to which the individual belongs. Every candidate, previous to admiffion, muft undergo fuch examination as may be deemed requifite.

The ftudents pay into the funds of the college fuch fum annually as is determined by the fupreme board of commiffioners. The prefent fubfcription is thirty guineas *per annum*. They are fubject to the rules and difcipline of the army, as if ferving with their regiments.

The ftudies purfued at this department are as follows:— Mathematics in all its branches; fortification; gunnery; caftrametation; military drawing and furveying; the reconnoitring

noitring of ground; the difpofition and movement of troops under all the various circumftances of offenfive and defenfive war; rules for eftimating the military refources of a country; and the German and French languages.

There are fix profeffors in this department, *viz.* one mathematics, &c.; one fortification; two military drawing; one French; one German.

Public examinations on points of fcience are held half yearly, in prefence of the collegiate board, upon which occafion one or more members of the fupreme board, not being members of the collegiate board, attend. Thofe officers who have gone through the regular courfe of ftudies, and have paffed that examination by which they may be duly qualified for ftaff appointments, receive certificates thereof, figned by the board, and fealed with the feal of the college.

The *junior* department was firft eftablifhed at Great Marlow in 1802, (but has recently been removed to Sandhurft, near Bagfhot,) to afford a provifion for the fons of officers who have fallen, or been difabled, in the fervice of their country; and the means of education to the fons of thofe officers who belong to any regular regiments. It confifts of four companies, of 103 cadets each. They are admitted upon three different eftablifhments, *viz.*

1ft. Orphan fons of officers who have fallen or been difabled in the fervice, are admitted free of expence, except in bringing the firft fuit of uniform on their admiffion, and keeping up their ftock of linen during their refidence at the college. They are provided with board, clothing, and education, by the eftablifhment, free of charge.

2d. The fons of officers actually ferving in regular regiments of the line, who pay a certain fum *per annum* (from 10*l.* to 60*l.*) according to the rank of their fathers.

3d. The fons of noblemen and gentlemen, who pay 100*l.* *per annum* each.

Applications for admiffion muft be addreffed to the governor. — Every candidate previous to admiffion muft pafs an examination in Latin and Englifh grammar, and the firft four rules of arithmetic. No candidate can be admitted who is under thirteen years of age, or above fifteen.

There are examinations held monthly, which are conducted by the profeffors of the fenior department, to afcertain the progrefs of each cadet, previous to his removal from one clafs to another. There are alfo public half yearly examinations upon the fame principle as thofe at the fenior department, previous to the cadets receiving commiffions from the college; and, according to their proficiency in the courfe of ftudies, they have certificates of qualifications to ferve in the army as officers, granted to them by the board of commiffioners, in whofe prefence the examination takes place.

The ftudies purfued at this department are as follows: — Mathematics; fortification; military drawing; landfcape drawing; hiftory, geography, and claffics; French; German; and fencing.

There are feven mafters of mathematics; four of fortification; five of military drawing; three of landfcape drawing; four of hiftory, geography, and claffics; fix of French; one of German; three of fencing.

Gentlemen cadets are allowed to purchafe commiffions at any time during their continuance at the college; but no gentleman cadet can be recommended for a commiffion by private intereft until he has made a certain progrefs in his ftudies. See Woolwich and *High* Wycomb.

SANDISTON, a town of Effex county, in New Jerfey, having 703 inhabitants.

SAND-STONE, l. 10, *r.* to be vifible. In other fandftones, the grains, &c.

SANDY Creek. Add—Alfo, a townfhip of Mercer county, in Pennfylvania, containing 327 inhabitants.

Sandy *Lake*, a townfhip of Mercer county, in Pennfylvania, having 403 inhabitants.

SANGUISORBA. Add after S. *officinalis*—Mr. Parkes, in his "Chemical Effays," (vol. v. p. 12.) informs us, on the authority of a tanner, that there is more of the tanning principle in the plant called burnet than in oak-bark. His informant fuggefted, that it might be cultivated for cattle, which (he fays) are fond of it, and ploughed up every three years in order to collect together the root for the purpofe of tanning.

SANSANDING. Add—Sanfanding is called Badoo, and in Park's laft miffion to Africa is reprefented as a fmall town, confifting of 300 huts; another Badoo, N. of this, is called *Sanfanba*. Sanfanding is faid to contain 11,000 inhabitants; it has no public buildings, except the mofques, two of which, though built of mud, are not inelegant. The market-place is a large fquare, ftored with articles of merchandize, and crowded with people. Some of the ftalls contain nothing but feeds; others, indigo in balls; others, wood-afhes in balls; others, Houffa and Jinnie cloth. Here are alfo, antimony, fulphur, copper and filver rings and bracelets, amber, filks from Morocco, tobacco and falt, yellow leather, &c. &c. Park's Laft Miffion to Africa, p. 216.

SAP, *Chemical Compofition of.* Add—Dr. Prout has examined the fap of the common vine. He found its fp. gr. did not differ from that of common water. It did not affect litmus paper, and contained fo little of folid matter, that 2300 parts of it evaporated to drynefs left only one part of refiduum, of which about half was carbonate of lime, and the reft a peculiar vegetable matter infoluble in alcohol, with traces of an alkali.

SAPHIES, an African term which denotes certain charms or amulets, which the negroes conftantly wear about them. Thefe faphies are prayers, or rather fentences from the Koran, which the Mahometan priefts write on fcraps of paper, and fell to the fimple natives, who regard them as poffeffing very extraordinary virtues. Some of the negroes wear them to guard themfelves againft the bite of fnakes or alligators; and in this cafe, the faphie is commonly inclofed in a fnake's or alligator's fkin, and tied round the ankle. Others have recourfe to them in time of war, to protect their perfons againft hoftile weapons; but the common ufe to which thefe amulets are applied is to prevent or cure bodily difeafes; to preferve from hunger and thirft, and generally to conciliate the favour of fuperior powers under all the circumftances and occurrences of life.

Similar charms or amulets are common in all parts of Africa, under the different denominations of *domini*, *grigri*, *fetiche*, &c. &c.

SAPPHIRE. See Mineralogy, *Addenda.*

SARASWATI, col. 2, l. 23 from bottom, for creature *r.* creative. Col. 3, l. 8, for Jayatri *r.* Gayatri. Col. 5, l. 11 from bottom, for painted *r.* pointed.

SARATOGA, l. *ult.* *r.* in 1810; add—of whom 107 were flaves.

SARKFOOT. Add—In 1811 the parifh of Graitney contained 333 houfes, and 1749 perfons; *viz.* 797 males, and 952 females.

SAROS, l. 4, add—Berofus ufed this period, and alfo *Neros* and *Sofos* (which fee), in chronological calculations, and fixing the epochas of his hiftory of Babylon. Ancient authors, however, are not agreed as to the number of years contained

contained in the Saros. Syncellus, after Beroſus, Abydenus, Alexander Polyhiſtor, &c. affirm, that it was a period of 3600 years, which is by no means probable. Dr. Halley agrees with Suidas in identifying the ſaros with the period of 223 (not 222 of Suidas) ſynodic lunar months mentioned by Pliny, which amount to nearly eighteen of our years; a period which furniſhes an eaſy method of predicting eclipſes within the limits of the error of only half an hour; and the formation of this cycle evinces the ſkill of the Chaldæans in aſtronomical computation.

SAVANNAH, l. *penult.* inſert—the ſlaves in the county being 7557, and in the town 2195.

SAUCON, *Lower* and *Upper*, two townſhips of Northumberland county, in Pennſylvania, the former containing 1074, and the latter 1456 inhabitants.

SAVING-Banks, or *Banks for Savings*, are inſtitutions which, under this appellation, are of recent origin, and which have been eſtabliſhed for the purpoſe of ameliorating the condition of the lower claſſes of mankind. Many ſchemes, of various denominations, have been propoſed with a view partly, or wholly, to this object. One of the moſt ancient of this kind is the inſtitution of male *Friendly Societies*, which was eſtabliſhed about a century ago, and which, to a certain extent, counteracted the preſſure of poor-rates, and the growth of thoſe baneful habits of dependence which poor-rates are adapted to produce. (See Friendly *Societies*.) Theſe ſocieties, though they partake of the nature of inſurances on life and property, by promiſing certain advantages in the event of certain caſualties or contingencies, are, however, preferable to common inſurance offices, inaſmuch as the members inſure each other, and retain all the profits in their own hands for the general advantage. In theſe ſocieties, there is alſo a benevolent principle that influences thoſe who form them, and induces them to feel and expreſs a ſolicitude for each other's welfare. Neverthelefs, the benefits derived from them by individual members are often diſtant, and in their nature uncertain; ſo that thoſe who have regularly contributed to them for forty or fifty years have not received a ſhilling from their funds. In the year 1772, baron Maſeres publiſhed "A Propoſal for eſtabliſhing Life Annuities in Pariſhes, with a View to the Benefit of the Induſtrious Poor;" and this was accompanied with the ſuggeſtions of ſome alterations by the Rev. Dr. Price. The ingenious baron recommended to the nation, to obtain a law for enabling the pariſh-officers in England to grant, upon purchaſe, to the labouring inhabitants life-annuities, payable out of the pariſh-rates. The plan was approved by perſons of the moſt diſtinguiſhed character at that period, and a bill was brought into the houſe of commons by Mr. Dowdſwell, under the auſpices of Mr. Burke, ſir George Savile, Lord John Cavendiſh, Mr. Dunning, Mr. Thomas Townſhend, and others, for carrying it into effect. The bill was paſſed, but it miſcarried in the houſe of lords at the ſecond reading. However deſirable and excellent this plan might appear in theory, it was not likely to prove effectual; becauſe, for the purchaſe of the propoſed annuities, a ſum of money, of great amount to the purchaſer, was demanded at once; and it was out of his power to procure it. A ſcheme ſomewhat reſembling that of a ſaving-bank was publiſhed in 1797 by Mr. Bentham, in Young's "Annals of Agriculture." One part of his plan comprehended an inſtitution which he denominated "A Frugality-Bank." Into this bank he propoſed to receive the depoſits of the poor, not for the mere purpoſe of yielding an intereſt, and being withdrawn when wanted, but to form or purchaſe an annuity for old age, when the ability for earning would be deſtroyed or impaired. He ſuggeſted, however, that this ſuperannuation annuity ſhould, either wholly or in part, be converted into any other ſpecies of benefit adapted to the exigencies of the owner. *E. gr.* It might be changed into an annuity for an exiſting wife, in the event of widowhood, or into an annuity during the nonage of a certain number of children; or it might ſerve as a pledge for money borrowed; or part of it might be ſold for raiſing a marriage-fund; or it might be ſimply withdrawn. As no attempt was made for the accompliſhment of Mr. Bentham's plan of a frugality-bank, it remained without effect. It is needleſs to mention, or to detail, the various particulars of a plan ſubmitted to the public by Mr. Bone in the years 1805 and 1806; as it comprehends a great number of objects which lay beyond the attainment of the poor.

It was ſtill a matter of regret that, notwithſtanding various ſchemes that had been ſuggeſted, no plan had been deviſed for ſecuring to the labouring claſſes a place of ſafe depoſit for the fruits of their induſtry, ſo as to encourage them to ſave, in the years of active exertion, ſuch a portion of their gains as they might be able to ſpare from their preſent neceſſities, ſo that they might have a reſource in the ſeaſon of misfortune, or in the decline of life; and more eſpecially to afford them the advantage of receiving regular intereſt for their ſmall ſavings, on a ſcale advancing to a certain extent, in proportion to the amount and continuance of their depoſits. Of the firſt eſtabliſhment of an inſtitution that may properly be called a ſaving-bank, we have an account in N° 84. of "The Reports of the Society for bettering the Condition of the Poor." From this report it appears, that a female benefit-club was eſtabliſhed on the 22d of October, 1798, at Tottenham, near London, under the patronage of a number of ladies. This inſtitution comprehended within its general deſign and plan two other objects, *viz.* a fund for loans to prevent the uſe of pawnbrokers' ſhops, and a "bank for the earnings of poor children." "Children of either ſex," ſays Mrs. Priſcilla Wakefield, an ingenious and benevolent lady, whoſe pen was employed in the inſtruction of the public, and whoſe heart was actuated by a generous concern for benefiting thoſe by whom ſhe was ſurrounded, "or of whatever age, whether belonging to a member or not, are permitted to bring any ſum above a penny to the monthly meeting of the ſtewardeſſes, to be laid up in the funds of the ſociety; where their ſmall earnings may accumulate in ſecurity, until wanted for an apprentice-fee, clothing, or going to ſervice, or ſome other important purpoſe." It is added, "although the children receive no addition to the pittance they depoſit in the fund, yet it anſwers ſeveral purpoſes; it ſtimulates them to earn and to ſave that which would probably be idly ſpent, as of too ſmall importance for care; it often encourages their parents to lay by a little ſtore for them, which they would not have thought of doing, had they not been invited by this opportunity of placing it in ſafety. It habituates the children to induſtry, frugality, and foreſight; and by introducing them to notice, it teaches them the value of character, and of the eſteem of thoſe who, by the diſpenſations of Providence, are placed above them; and in many inſtances, it may ſupply a reſource when it is eſſentially requiſite. The ſucceſs has already exceeded expectation; above ſixty children bring their little treaſure monthly." The ſucceſs of this children's-bank gave riſe to a more extenſive plan in the ſame place in 1804, called "The Charitable or Benefit Bank." This was begun for the expreſs purpoſe of providing a ſafe and profitable place of depoſit for the ſavings of labourers, fervants, &c., and opened once a month for receipts and payments. The books were at firft kept by a lady; fix wealthy individuals were appointed to act as truftees, each of whom agreed to receive an equal part of the fums depofited, and each to be refponfible to the amount of 100*l.* for the repayment of the principal with intereft. Any fum above 1*s.* was to be received, and, to encourage perfeverance, intereft at the rate of five *per cent.* was to be allowed for every 20*s.* which fhould remain a year with the truftees. For every additional 100*l.* it was agreed that a new truftee fhould be chofen; and thus the lofs to the truftees in fulfilling their engagement, with the fluctuation of intereft, could not be confiderable. The benefits of the inftitution were to be confined exclufively to the labouring claffes; but the refidence of the depofitors was not reftricted. One great advantage attending this plan is, that it holds out to the lower claffes fixed advantages, and preferves their little property from that fluctuation of value to which the public funds are liable. This was the firft diftinct "Bank for Savings," publicly fet on foot for the benefit of the lower claffes: it was founded by Mrs. Wakefield, and remained for fome time under her infpection and management. Mrs. Wakefield was fucceeded in the labour of conducting it by Mrs. Powell, who has appointed a treafurer, "to whom," fhe fays, "I account after every monthly meeting, that I may not be refponfible *myfelf* for the money lodged in my hands; and I have the purchafes made in the funds placed in the names of two truftees." This excellent female adds, that the benefits refulting from this inftitution are incalculable, as it has enabled many to fave fums which have made them comfortable for life, who would otherwife have fpent the money at an ale-houfe, or lent it to their friends. "I keep," fays Mrs. Powell, "the whole of the accounts myfelf; and carry on the bufinefs on fo eafy and fimple a plan, that I have nothing to relate. I merely receive and pay principal and intereft the firft Monday in every month, for an hour and a half. I have no affiftance whatever, except that I fend any money I have to the treafurer, and now and then compare his cafh-book with my own. The only care I have is to keep the refpective accounts correct. I have a ledger, a cafh-book, an intereft account, and a wafte-book. — I call a meeting of the truftees once a year to audit my accounts, and thofe of the treafurer, which are the counterpart of mine." In July 1817, an act was paffed for the protection and encouragement of banks for favings in England; and the feveral provifions and arrangements of this ufeful act are minutely detailed in the laft edition of Mr. Rofe's excellent "Tract on Saving Banks." Societies fimilar to thofe of the banks for favings have become of late years very numerous both in England and Scotland; and in England and Wales many of them have opened accounts with the bank of England under the late act of parliament.

Although fome few inftitutions of the fame and others of a fimilar kind had been eftablifhed foon after the commencement of the prefent century, yet their increafe was flow and inconfiderable until the year 1810; when the Rev. Mr. Henry Duncan, availing himfelf of one of the provifions of Mr. Bone's plan already mentioned, publifhed an account of it, and propofed that the gentlemen of Dumfriesfhire fhould eftablifh banks for favings in the different parifhes of the county. Whilft his zeal was applauded, his recommendation was difregarded. However he fteadily perfevered, and determined to make the experiment in his own parifh; and denominated his new eftablifhment "The Parifh Bank Friendly Society of Ruthwell." He fo far fucceeded, that at the time of publifhing the fecond edition of his effay, his capital amounted to a fum exceeding 1400*l.* About the beginning of the year 1813, a very refpectable and ufeful fociety was eftablifhed at Edinburgh for the fuppreffion of beggars. Mr. J. H. Forbes, an active director of this anti-mendicant fociety, having acquainted himfelf, by a perufal of the reports for bettering the condition of the poor, with the plan of the charitable bank at Tottenham, and with the regulations of the fervants' fund at Bath inftituted in 1808, propofed a plan and adopted regulations for the eftablifhment of a favings' bank in the metropolis of Scotland. From the time of the publication of the firft edition of the Effay on Parifh Banks, the fecond Report of the Edinburgh Society, and the Report of the Provident Inftitution at Bath, faving banks have multiplied to fuch a degree as to leave no room for doubt that the benefit of the fyftem will be foon communicated to every town and village in Great Britain and Ireland. It does not appear, however, that any inftitution of this kind of any note was opened in London till the end of January in 1816, when the "London Savings' Bank" commenced its operation. But they are now prevalent through various parts of the city and fuburbs. Of their importance and utility none can entertain any doubt; although, like other ufeful fchemes, they may be liable to fome objections. The lords' committee in their report on the poor laws, bear the following teftimony in their favour. "The committee are decidedly of opinion, from every information they have received, that it is expedient to recommend the adoption of 'Provident or Saving Banks,' as likely to increafe the comforts and improve the condition of the poor, and to render them lefs dependent on parochial relief; which, under the beft and moft confiderate adminiftration of it, can never be fo fatisfactory to the perfon who is the object of it, or fo confiftent with thofe honourable feelings of pride and independence, which are implanted in the breaft of man, as that refource which is the refult of his own induftry and the produce of his own exertions." The commons' committee alfo report, "that they have had no difficulty in perceiving how every extenfion of the poors' fund is in general fure to be followed up by a more than proportional increafe of actual poverty;" nor has it efcaped their obfervation, "that the relaxation of *providential* and *economical habits* is fure to go much beyond the capability of any inftituted fund to meet the effects of this relaxation." "If your committee have been defirous to recommend fome gradual but effectual check to the otherwife certain growth and ultimately inevitable effects of the prefent fyftem of poor laws, they have not been lefs attentive to the duty of fuggefting every poffible means of affording fpecial encouragement and facility to meritorious induftry, for refcuing itfelf from the evils of an habitual reliance on parochial relief; and they have looked to this part of the fubject with the more anxiety, from the entire conviction, that in proportion to the aggregate number of perfons who are reduced to this unfortunate dependence, muft be not only the increafe of mifery to each individual, but alfo the moral deterioration of the people, and ultimately from the concurrent tendency of thefe evils, the infecurity and danger of the ftate itfelf. The encouragement of frugal habits would, in any ftate of fociety, be an object of importance, but your committee are ftrongly impreffed with the opinion, that, in the prefent fituation of the poor of this country, it is chiefly by the gradual reftoration of a feeling of reliance upon their own induftry, rather than upon the parochial affeffments, that the tranfition to a more wholefome fyftem can be affected.

"Your

"Your committee have the satisfaction of seeing the institutions for the secure and profitable deposit of the earnings of the industrious, which was heretofore projected, are now by the spontaneous exertions of individuals, in actual and successful operation; and from the growth of the system of saving-banks, they are inclined to expect very beneficial results, not only in affording to the industrious poor a secure deposit for their savings, but in familiarizing them with a practice, of which the advantage will be daily more apparent." Both the above cited reports are justified by ample evidence from the testimony of individuals, which is annexed to them. We shall here subjoin an extract from the third report of the "Edinburgh Society for the Suppression of Beggars," 1815. "To improve permanently, and effectually to better the condition of the poor, can be accomplished only by encouraging among them habits of industry, sobriety, prudence, and foresight. The very general adoption of the plan of instituting savings' banks shews, that the genuine and enlightened principles of benevolence are beginning to be well understood, and will be zealously acted upon whenever a proper opportunity occurs; for no scheme seems better calculated for the comfort of the poor than this simple plan for enabling the poor man to lay up in the day of health for the hour of sickness. *It relieves from want without checking industry;—it secures independence without inducing pride;—it removes those painful misgivings which render the approaches of poverty so appalling, and often paralize the exertions which might ward off the blow;—it leads to temperance and the restraint of all the disorderly passions, which a wasteful expenditure of money nourishes;—it produces that sobriety of mind, and steadiness of conduct, which afford the best foundation for the domestic virtues in humble life.* The effects of such an institution as this upon the character of the people, were it to become universal, would be almost inappreciable." But it would be endless to cite authorities for establishing a principle so universally acknowledged by all whose observation and experience render them competent judges. We are therefore the more surprised to find it asserted in the part of the Supplement to the Encyclopædia Britannica recently published, that "taken by themselves, it is at least a doubt whether savings' banks may not produce as great a quantity of evil as good." See Annals of Banks for Savings. London. Richardson, &c. 1818.

SAUSSURITE. See Mineralogy, *Addenda*.

SAYBROOK. Add—In 1810 it contained 3994 inhabitants, including 5 slaves.

SCALE *of Chemical Equivalents*. The description of this ingenious and useful instrument, contrived by Dr. Wollaston, has been omitted in its proper place; but its importance demands that it should be introduced here.

The author states, that he does not offer this instrument as an attempt to correct the estimates that have been formed by others, but as "a method by which their results may be advantageously applied, in forming an easy approximation to any object of our inquiries."

"The means (to use Dr. W.'s own words) by which this is effected, may be in part understood by inspection of the plate, (*Chemistry*, *Plate* XXI. *figs*. 5, 6.), in which will be seen the list of substances intended to be estimated, arranged on one or other side of a scale of numbers in the order of their relative weights, and at such distances from each other, according to their weights that the series of numbers placed on a sliding scale can at pleasure be moved, so that any number expressing the weight of a compound may be brought to correspond with the place of that compound in the adjacent column. The arrangement is then such, that the weight of any ingredient in its composition, of any re-agent to be employed, or precipitate that might be obtained in its analysis, will be found opposite to the point at which its respective name is placed.

"In order to shew more clearly the use of this scale, the plate exhibits two different situations of the slider, in one of which oxygen is 10, and other bodies are in their due proportion to it; so that carbonic acid being 27.54, and lime 35.46, carbonate of lime is placed at 63. In the second figure, the slider is represented drawn upwards, till 100 corresponds to muriate of soda, and accordingly the scale then shews how much of each substance contained in the table is equivalent to 100 of common salt. It shews with regard to the different views of the analysis of this salt, that it contains 46.6 dry muriatic acid and 53.4 of soda, or 39.8 sodium and 13.6 oxygen: or if viewed as chloride of sodium, that it contains 60.2 chlorine and 39.8 sodium. With respect to re-agents it may be seen, that 283 nitrate of lead containing 191 of litharge employed to separate the muriatic acid, would yield a precipitate of 237 muriate of lead, and that there would then remain in solution nearly 146 nitrate of soda. It may at the same time be seen, that the acid in this quantity of salt would serve to make 232 corrosive sublimate, containing 815.5 red oxyd of mercury, or would make 91.5 muriate of ammonia, composed of 62 muriatic gas, (or hydro-muriatic acid,) and 29.5 ammonia. The scale also shews, that for the purpose of obtaining the whole of the acid in distillation, the quantity of oil of vitriol required is nearly 84, and that the residuum of this distillation would be 122 dry sulphate of soda, from which might be obtained by crystallization 277 of Glauber's salt, containing 155 water of crystallization. These and many more such answers appear at once by bare inspection, as soon as the weight of any substance intended for examination is made by motion of the slider, correctly to correspond with its place in the adjacent column.

"With respect to the method of laying down the divisions of this scale, those who are accustomed to the use of other sliding rules, and are practically acquainted with their properties, will recognize upon the slider itself the common Gunter's line of numbers (as it is termed), and will be satisfied that the results which it gives are the same that would be obtained by arithmetical computation." See Gunter's *Scale*.

This scale may be had at the different mathematical instrument-makers; and we need scarcely add, that the numbers laid down upon it differ a little from those recently determined by Dr. Thomson. These differences, however, are in general very trifling; but should any one prefer using the new numbers, they will find them stated in the tables appended to Atomic *Theory*.

SCAPOLITE. See Mineralogy, *Addenda*.

SCHILLER-SPAR. See Mineralogy, *Addenda*.

SCHOOLS, *Military*, the principal institutions of this kind in our country, where officers may be formed for the profession by acquiring sound knowledge both in theory and practice, are the Royal Academy of Woolwich, the institution at Sandhurst near Windsor, and the academy at Portsmouth.

SCHUYLKILL. Add—Also, a township of Berks county, containing 353 inhabitants.

SCIOTO. Add—Also, a township of Pickaway county, having 216 inhabitants.—Also, a township of Ross county, having 840 inhabitants.

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SCOTLAND, col. 22, l. 29, for extent *r.* extinct.

SCOTS, l. 2, insert—those of the town included.

SCREEN, Skreen, or Altar-skreen, in *Architecture.* (See Reredos.) The choir-screen is the fence which separates the choir from the nave of the church.

SCRIVAN. Add—of whom 1816 were slaves in 1810.

SCROFULOUS, or Scrophulous *Tumours*. See Scrophula, Hip-joint, *Disease of*, White-swelling, &c.

SCRUBGRASS, in *Geography*, a township of Venango county, in Pennsylvania, containing 540 inhabitants.

SCULPTURE, col. 2, l. 22, omit the colon after required, and insert a comma after manner.

SEABROOK, l. 2, *r.* 774.

SEAL. Add—The broad seal of England was stolen from the lord chancellor's house in Ormond-street, March 24th, 1784; and a new one was brought into use, upon the union of Ireland with Great Britain, January 1st, 1801.

Seal, in *Geography*, a township of Scioto county, in Ohio, having 379 inhabitants.

SEBASTICOOK, a township of America, in the district of Maine, and county of Somerset, having 105 persons.

SECRETIONS, Secreted *Fluids*, *Chemical Properties of*. See Fluids, *Animal*.

SECTS *of Hindoos*, col. 2, l. 8 and 23 from bottom for Bhon *r.* Bhow. Col. 10, l. 31, transpose the points.

SEDATIVUM Sal. Add after Salt—under the article Salts.

SEEING, col. 3, l. 5, add—Dr. Wells, in his "Essay on single Vision with two Eyes," has reduced the principal opinions upon this subject into two classes. The first class comprehends those of Galen, Alhazen, Rohault, Dr. Briggs, and sir Isaac Newton; all of whom have regarded the question as equivalent to the following one: Why should the mind be affected with only one perception from two impressions upon the external organs of sight, since either of those impressions is of itself sufficient to produce a similar perception? To this question they reply, that the two impressions are united before they are communicated to the mind, and they only differ concerning the manner in which such an union takes place. Against the opinions now stated Dr. Wells objects, that they must be considered as mere conjectures, founded upon certain supposed changes in the brain and nerves, the existence of which, from the nature of the parts, it is impossible either to demonstrate or to refute by experiments; and that no one of them, though admitted to be true, is yet sufficient to explain the phenomena on account of which it was framed. To the second class, Dr. Wells refers the opinions of those who maintain, that an object is seen single by both eyes, because it is seen by each of them in the same external place; and who profess to point out some law, or constant rule of vision, from which this sameness of place is to be derived as a necessary consequence. This view of the question, as our author imagines, was first suggested by Aguilonius, and it has been since adopted by Dechales, Dr. Porterfield, Dr. Smith of Cambridge, and Dr. Reid of Glasgow.

Aguilonius, who has been followed in the same train of reasoning by Dechales and Dr. Porterfield, begins with defining the terms *horopter* and *plane of the horopter*. If a line be drawn through the point of the mutual intersection of the optic axes, parallel to the interval between the eyes, this from its office is denominated the horopter; and a plane, supposed to pass through this line perpendicular to the plane of the optic axes, is called by Aguilonius the plane of the horopter. According to his statement, it is a law of our constitution, that all bodies which we see with one glance or look, whatever are their real places, appear to each eye to be situated in this plane; and upon this supposition he shews why some should be seen single with two eyes, and others double. For according to a recent opinion, which he has advanced, and which other writers on vision have not contradicted, the two lines of direction in which an object is seen with both eyes, can meet each other only in one point, and therefore all bodies which are really situated in the plane of the horopter, must necessarily appear single, as the lines of direction in which any one of them is perceived by the two eyes, coincide in that plane, and no where else; and all bodies which are not situated in the plane of the horopter must as necessarily appear double, since, in this case, the lines of their visible directions intersect each other, either before or after they pass through it. To this reasoning Dr. Wells replies, that if the visible places of all bodies were contained in the plane of the horopter, they would appear of magnitudes proportional to the angles which they subtended at the eye; *e. gr.* a finger held near to the face would seem as large as the part of a remote building which it might conceal from the sight. But this is contrary to experience, and therefore no reasoning that depends upon it can be admitted.

If it be asked, says Dr. Smith, why, in seeing with both eyes, we do not always see double, because of a double sensation, it is sufficient to reply, that in the ordinary use of our eyes, in which the pictures of an object are constantly painted upon "corresponding places or points" of the retinas, the predominant sense of feeling has originally and constantly informed us that the object is single. What he means by "corresponding points," he thus explains: When the optic axes are parallel, or meet in a point, the two middle points of the retinas, or any points which are equally distant from them, and lie on the same sides of them, either towards the right hand or left hand, or upwards or downwards, or in any oblique direction, are called "corresponding points." Accordingly our idea of the outward place of an object is connected with both these sensations; as is manifest by its appearing in two places when its pictures are not painted upon corresponding places of the retinas; which is only a direct consequence arising from our general habit of seeing. If it be asked why, in order to produce single vision, all men agree in directing their eyes toward the object in such a manner as to receive its pictures upon corresponding points of the retinas, since custom might have connected the sensations of any other two points with the information of its unity from feeling? To this objection, suggested by Dr. Reid, the reply may be made in Dr. Smith's own words (vol. i. p. 46.): "When we view an object steadily, we have acquired a habit of directing the optic axes to the point in view; because its pictures falling upon the middle points of the retinas, are then distincter than if they fell upon any other places; and since the pictures of the whole object are equal to one another, and are both inverted with respect to the optic axes, it follows that the pictures of any collateral point are painted upon corresponding points of the retinas."

Dr. Wells is of opinion, that Dr. Smith's hypothesis for the solution of this celebrated question is liable to other objections

objections not so easily repelled. Admitting the fact respecting corresponding points to be true, it may be observed, that if we are taught by *feeling* to see objects single, notwithstanding a sensation in each eye, the informations of the former sense ought to be uniform, or else one set of visual appearances would be associated with different reports from feeling, and no certain mark would be afforded us which of them we should trust. Feeling, as Dr. Smith allows, is not always the predominant, but sometimes the inferior sense; and its informations are not constant and original, but variable and derived. When a difference occurs between the informations of the two senses, it is natural to enquire what rule have we for determining which is most worthy of credit. But supposing that the sense of touch to have originally and constantly informed us that objects are single, it would not follow that we are thence taught to see them also single. For, since the place which an object seems to either eye to possess, manifestly depends both upon its apparent distance and its apparent direction from that eye, if visible place be, in the language of Dr. Smith, only an *idea* of real or tangible place, visible direction must bear the same relation to tangible direction; whence it follows, that we can never have a more accurate knowledge of the direction, in which an object may lie from any part of our bodies, by sight than by touch. Whereas the contrary is proved by facts. Moreover whatever be the direction in which an object may appear to either eye, it cannot be seen in the same place by both, except at some point common to the two directions. Accordingly Dr. Smith says, that when an object is perceived single with both eyes, it is seen at the mutual intersection of the two visual rays; the visible direction of any object coinciding, according to him, with the visual ray, or the principal ray of the pencil which flows from it to the eye. Should we then even allow, that all we know by sight of the places of bodies has been borrowed from feeling, it will still be easy to shew, that the rule of vision for each eye, which he has derived from such experience, that of our seeing objects in the directions of their visual rays, is inconsistent with many of the phenomena of sight with two eyes; and, consequently, that he has left unremoved the chief difficulty of his subject, which was to explain the single appearance of objects to both eyes, from those laws, or rules of vision, which affect each of them singly. For it is a well-known fact, that if two bodies of the same shape, size, and colour, be placed, one in each optic axis, they appear but as one body, provided they be at equal distances from the eyes. Agreeably to the theory of our seeing objects in the direction of their visual rays, this cannot happen, except the united body appear at the intersection of the optic axes. Dr. Smith, accordingly, maintains that it does. In the first place, Dr. Wells appeals to experiment for a direct proof that it does not; and, in the second, he observes, that, as the two bodies in the optic axes appear as one, whether they be situated within or beyond the concurrence of those lines, and as a right line joining the bodies, and extended both ways, appears at the same time to the sight as a right line, it follows, upon admitting the fact which he has denied, that all objects in the plane of the optic axes which are seen in one position and state of the eyes, however near to us, or however remote they may in reality be, must appear to be equally distant, or rather in a line drawn through the concourse of the optic axes, parallel to the interval between the eyes, and named by opticians the *horopter*. Again, if a right line be made to pass through any part of the plane of the optic axes, at right angles to it, the portions above and below this plane are perceived to be in the same right line with the point which is situated in it, and the whole appears perpendicular to the plane. But the point in the plane is seen, by the last article or proposition, in the horopter; the whole, therefore, of the perpendicular line must be seen in a plane passing through the horopter at right angles to that of the optic axes; or, in other words, in the *plane of the horopter*, in which consequently all bodies will have their visible places. But this was the very opinion of Aguilonius, to which he was probably led by a similar train of reasoning; though, as a teacher, he might choose rather to ground it immediately upon an original law of our constitution.

Dr. Reid agrees with Dr. Smith in his general principle, but differs from him in maintaining the property to be original by which any two places in the retinas exhibit only one object, while Dr. Smith derives it altogether from custom. They differ also with respect to the meaning of a term; Dr. Smith calling *corresponding points*, such as have the position just mentioned, whether they represent objects single or not; whereas Dr. Reid says, that those points correspond, whatever their position may be, which represent objects single; and he appears to Dr. Wells not always to attend to the double use of the same term, when he speaks of the opinions of Dr. Smith.

Could it be shewn, says Dr. Wells, that the places of the two retinas, which represent an object single when each receives its picture, are not the centres, or such others as are similarly situated, an obvious inference would be, that the single appearance of the object is not occasioned by a property in those places, bestowed upon them for this special purpose by nature; it being reasonable to expect, that such a property should be found, if any where, in those parts of the retinas which are the most like to each other.

Anatomists have commonly taught, that the centres of the spheres, to which the cornea, the ball of the eye, and the two portions of the crystalline belong, are all placed in the same right line, hence called the optic axis, and that this being produced both ways, passes through the centres of the cornea and retina, considered as surfaces. Opticians, on their part, observe, that an object appears single to both eyes, when the axis of each is accurately directed to it; from which they infer, that the centres of the retinas agree in suggesting but one object, though each receives its picture.—Again; since it is known by experience, that, while any object is seen single, to which the optic axes are turned, others at the same distance from the eyes likewise appear so; and since the pictures of these lateral objects fall upon points in the two retinas, equidistant from their centres, and both upon the same side, that is, both to the right or left of the centres, or both above or below them, opticians conclude, that every two places of the retinas, which are similarly situated with respect to the centres, must also agree in exhibiting but one object, though pictures are received by both.

But the whole of this reasoning, says Dr. Wells, is built upon a circumstance in the fabric of the eye, which has been shewn by some of the most eminent anatomists not to have place. For Varolius long ago observed, that the crystalline is not situated in the middle of the eye, but more *inwardly;* and the accurate Zinn has more lately mentioned, that if the eye be divided into a right and left half, the centre of the crystalline will be found in the inner portion. Haller confirms this fact; and Winslow's observation, that the centres of the pupil and iris do not coincide, but that the former is nearer to the nose than the latter, is connected with it; since both Zinn and Haller agree, that

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the centre of the pupil is placed in the axis of the cryftalline, while that of the iris is evidently in the common axis of the cornea and globe. Now, a confequence of this pofition of the cryftalline is, that, contrary to what is univerfally maintained, no ray of light whatfoever can pafs unbent to the retina from the atmofphere, or any other medium differing in refractive power from the aqueous humour. If, then, the line joining the centres of the cornea and globe of the eye be what is called the optic axis, and if it be true, that objects appear fingle when we direct both thefe axes to them, it muft be evident, to fuch as are acquainted with the common rules of optics, that the pictures of thofe objects do not fall upon the centres of the retinas, but more internally; and, therefore, that the centres and all the other points of thofe membranes, which by the prefent fyftem are fuppofed to reprefent objects fingle, do in fact exhibit them double.

Admitting, however, that objects are reprefented fingle, when their pictures fall upon the centres of the retinas, or upon any other two points which are equally diftant from the centres, and both upon the fame fide, it appears to Dr. Wells, notwithftanding, to be in violation of all analogy, to afcribe this effect, with refpect to the points at leaft, on the right and left fides of the centres, to any peculiar property which they poffefs from nature. For when anatomifts find, in a new fpecies of animals, organs fimilar in ftructure to thofe of others they are already acquainted with, they immediately conclude, that they are alfo fimilar in regard to their ufe. In animals of the fame fpecies, they believe with certainty, that the organs they fee in one have the fame properties as the correfponding organs of another; and, if it be poffible, they attribute with greater certainty the lame properties to two organs of the like kind, which are found in the fame individual. Such is the influence of the rule, that refemblance of property is implied by refemblance of ftructure. Now it is an univerfal fact, that if an animal be divided into a right and left half, the correfponding parts of thofe organs which exift in pairs are found at equal diftances from the plane of partition. Thus, for inftance, in refpect to the eyes. the two optic nerves penetrate their outward coat at the fame diftance from this plane. Their mufcles, blood-veffels, and every other of their component parts and appendages, are arranged in the like manner; thofe neareft to the dividing plane, or the innermoft, in the one, being fimilar in ftructure to the innermoft in the other, the outermoft to the outermoft, and the intermediate to the intermediate. It is furely, therefore, natural to expect, that fuch parts fhould alfo be fimilar in their properties; and we in fact find this fimilarity to exift, wherever it can be clearly afcertained what the properties are. Every perfon, for example, admits, that the internal ftraight mufcle of the right eye performs the fame office, with refpect to that eye, as the other internal ftraight mufcle does with refpect to the left eye. What judgment are we then to form of the opinion of Dr. Reid, which attributes the fame original properties, or rather the joint poffeffion of one original property, to places in the retinas fituated at unequal diftances from the general plane of partition; which makes an *external* point in one to correfpond, in ufe, with an *internal* point in the other, and this too by a principle implanted by nature? If fuch things exift, they may, at leaft, be faid to ftand oppofed to a moft extenfive analogy.

To thefe arguments, *à priori*, againft the opinion of Dr. Reid, Dr. Wells adds others derived from a confideration of its confequences: but our limits oblige us to refer for thefe to the author's own account. If objects, it may be faid, appear fingle neither from cuftom, nor from an original property of the eyes, have we not an effect without a caufe, and muft there not be fomething wrong in the facts or reafoning which lead to fuch a conclufion? Dr. Wells replies: Since vifible place contains in it both vifible diftance and vifible direction, it is not neceffary that the fingle appearance of an object to both eyes, fhould depend altogether either upon cuftom, or an original principle of our conftitution; for its vifible diftance to each eye may be learned from feeling, and its vifible direction be given by nature; in which cafe, the unity of its place to the two eyes, will be owing to neither of thofe caufes fingly, but to a combination of both; and this Dr. Wells regards as a fufficient reply.

Dr. Wells proceeds to propofe and illuftrate his own theory for the folution of the queftion, why objects are feen fingle with two eyes; or, in other words, why they appear in the fame place to both? The vifible place of an object being compofed, as he conceives, of its vifible diftance and vifible direction, it becomes neceffary, for fhewing how it may appear the fame to both eyes, to explain in what mannner the diftance and direction, which are perceived by one eye, may coincide with thofe which are perceived by the other. He begins with a confideration of the diftance. In judging of diftance by fight, no perfon has ever obferved, that while an object feemed to one of his eyes at a certain diftance, it has appeared to the other to be at a different diftance, and from this circumftance alone has been feen double; or, to exprefs the fame thing in another way, that while the vifible appearance of an object to one eye, covered the vifible appearance of the fame object to the other eye, the two appearances did not feem entirely to coincide, and make one, but were feen feparate by the two eyes. Hence it follows, that the difficulty in finding a true and fufficient caufe for the union of the two vifible places of one or two objects to two eyes, muft therefore confift altogether in fhewing, in what manner the two apparent directions may coincide, confiftently with the attending phenomena.

From the time of Kepler's difcovery of the feat and manner of vifion, there have been, fays our author, only two theories offered refpecting the apparent directions of objects. One is, that they are perceived in the direction of lines paffing from their pictures on the retina, through the centre of the eye; the other, that their apparent directions coincide with their vifual rays. But both of thefe theories are inconfiftent with the phenomena of fingle vifion with two eyes. For according to neither of them can an object, placed at the concourfe of the optic axes, be feen fingle, unlefs we have a moft accurate knowledge of its diftance; nor will either admit two objects to be feen as one, which are fituated in the optic axes, whether on this fide, or beyond where they meet, unlefs the united object be referred by fight to their very point of interfection; both of which conclufions are contradicted by experience. It is evident, therefore, that fome other theory of vifible direction is required, which fhall not be liable to thefe objections.

Dr. Wells's theory is illuftrated in the following propofitions, which we can merely ftate without enlargement: 1. Objects fituated in the optic axis do not appear to be in that line, but in the common axis; *i.e.* in a line drawn from the middle of the vifual bafe, through the point of interfection of the optic axes, or parallel to them, if they be parallel to each other. 2. Objects, fituated in the common axis, do not appear to be in that line, but in the axis of the eye, by which they are feen. 3. Objects, fituated in any line drawn through the mutual interfection of the optic

optic axes to the visual base, do not appear to be in that line, but in another, drawn through the same intersection, to a point in the visual base distant half this base from the similar extremity of the former line, towards the left, if the objects be seen by the right eye, but towards the right, if seen by the left eye. In the application of the theory which Dr. Wells has endeavoured to establish in the preceding propositions, he observes, that, if the question be concerning an object at the concourse of the optic axes, it is seen single, because its two similar appearances, in regard to size, shape, and colour, are seen by both eyes in one and the same direction, or, if you will, in two directions, which coincide with each other through the whole of their extent. It therefore matters not, whether the distance be truly or falsely estimated; whether the object be thought to touch our eyes, or to be infinitely remote. And hence we have a reason, which no other theory of visible direction affords, why objects appeared single to the young gentleman mentioned by Mr. Cheselden, immediately after his being couched, and before he could have learned to judge of distance by sight.

When two similar objects are placed in the optic axes, one in each, at equal distances from the eyes, they will appear in the same place, and therefore one, for the same reason that a truly single object, in the concourse of the optic axes, is seen single. Here again, as the two visible directions coincide in every point, it is not necessary that the united appearance should be judged to be at any particular distance; that it should be referred, for instance, to the concourse of the optic axes, where the two other theories of visible direction are obliged to place it, in opposition to the plainest observation.

Objects, any where in the horopter, will be seen single, because their apparent directions to the two eyes will then completely coincide. And for a contrary reason, those placed in any other part of the plane of the optic axes will appear double. To make these things evident, let a line pass through the point of intersection of the optic axes and any given object, to the visual base, which is to be produced, if necessary; and let it be called the line of the object's real position. Take afterward, in the visual base, or its production, two points, one on each side of the line of real position, and both distant from its termination there, half the visual base. Lines drawn from these points, through the point of intersection of the optic axes, must consequently contain the two visible positions of the object. But when this is situated in the horopter, the line of real position will coincide with the horopter, and will not therefore reach the visual base, unless at an infinite distance from the eyes. For which reason, the two lines, containing the visible positions of the object, must fall upon the visual base at a like distance, and must consequently be regarded as coinciding with each other. When the object is not in the horopter, the two lines of visible direction will be found, by the same means, not to coincide.

SEGO, col. 2, l. 13, *r.* Mansong; l. 17, *r.* Sansanding.

SELENIUM, in *Chemistry*, the name of an elementary substance recently discovered by Berzelius, and considered by him as a kind of semi-metal. This substance was first mistaken for tellurium. It was obtained from a sulphuric acid manufactory at Gripsholm, where pyrites from the mines of Fahlun were employed, and which of course contained the substance in question. It also exists in the same mines combined with copper. Selenium has the properties of a metal combined with those of sulphur to so great a degree, that it is difficult to know under which head to class it, and in short whether it might not be rather considered as a new species of sulphur. In its metallic state it has a brilliant metallic lustre externally, with a tinge of red. The fracture is vitreous, like that of sulphur, but with a very brilliant lustre of a grey colour. It becomes soft at a temperature of 212°, and at a higher temperature it melts; and at a temperature about equal to that at which mercury boils it may be distilled. When in a gaseous state, it is yellow, like sulphur. When sublimed in a large vessel, it is deposited in the form of flowers of a cinnabar colour, but not oxydized. During its cooling, it preserves for some time a certain degree of fluidity, so that it may be moulded between the fingers, and drawn into threads, which are transparent, and of a ruby-red colour when held between the eye and the light; but by reflected light they exhibit a brilliant metallic lustre. It burns with an azure-blue flame when heated with a candle, and exhales a strong odour of horse-radish.

Selenium combines with metals, and generally produces a reddish flame. The alloys are commonly grey, with a metallic lustre. The seleniuret of potassium dissolves in water, without evolving any gas, and produces a red-coloured solution, which has the taste of hydrosulphuret of potash. When muriatic acid is poured upon this seleniuret, a seleniuretted hydrogen gas is disengaged, which is soluble in water, and precipitates all metallic solutions, even those of zinc and iron. This gas has the odour of sulphuretted hydrogen gas when it is diluted with air, but if it be breathed less diluted it produces a painful sensation in the nose, and a violent inflammation, ending in catarrh, which continues for a considerable time.

Selenium combines with the alkalies both in the humid way and by fusion. These combinations are red. The seleniurets of barytes and lime are also red, but they are insoluble. It also dissolves in melted wax, and in the fat oils; the solutions are red, but have no hepatic odour. There exist also seleniuretted hydroseleniurets of the alkalies and of the earths.

Selenium dissolves in nitric acid by the assistance of heat; the solution evaporated and sublimed yields a mass crystallized in needles, which is a pretty strong acid. It has a pure acid flavour, and forms peculiar salts with the alkalies, earths, and metallic oxyds. The selenic acid is soluble in water and in alcohol: its combinations with potash and ammonia are deliquescent; the latter is decomposed by fire, water is given out, and the selenium is reduced The seleniates of barytes and lime are soluble in water. The selenic acid mixed with muriatic acid is decomposed by zinc, and the selenium is precipitated in the form of a red powder; by sulphuretted hydrogen gas an orange-yellow precipitate is formed.

Such is a brief summary of the properties of this curious substance. From the small quantities in which it has hitherto been found, we believe no experiments have been made to ascertain the weight of its atom, &c.

SELKIRK, l. 23 from bottom, for 440 *r.* 439.

SELKIRKSHIRE. In 1811 this shire contained 1080 houses, and 5889 persons; *viz.* 2750 males, and 3139 females: 500 families being employed in agriculture, and 363 in trade, manufactures, and handicraft.

SENECA. Add—Also, a county of New York, containing 16,609 inhabitants, of whom 101 are slaves.—Also, a town of Guernsey county, in Ohio, having 300 inhabitants.

SEPOY, a term used in India to denote a native soldier.

SERA-WOLLIES. See Kajaaga.

SERICA. Add—(See Thibet.) Hugh Murray, esq. in his "Ancient Geography of Eastern and Central Asia," published

published in the Edinburgh Tranfactions, concludes from the works of Ptolemy and his contemporaries, that Serica was China.

SERMON, col. 4, l. 38, for Buller *r.* Butler.

SERPENTARIUS, or Snake-eater, in *Ornithology*, a genus of birds allied both to Vultur and Falco, but moft nearly to the former. The characters are, beak vulturine, tongue pointed, and legs very long. It includes one fpecies, *viz.* the S. *Africanus*, or afh-coloured fnake-eater, with the hind-head crefted, the tail cuneated, and the middle tail-feathers lengthened. This is the V. Serpentarius or Secretary vulture of Latham, and the Falco Serpentarius of Gmelin's Linnæus. The moft accurate defcription is that of La Vaillant, who, in his African travels, had an opportunity of obferving it in its native regions. We refer to the 7th volume of Shaw's Zoology. It is an inhabitant of dry open plains in the lower parts of Africa.

SERPENTES.—Ater, l. 1, *r.* is white with black bands.

SEVIER, l. 2, *r.* 4595, and 294.

SHAPLEIGH. Add—containing 2362 inhabitants.

SHARON. Add after Portland—containing 944 inhabitants.—After Litchfield, having 2506 inhabitants.—After Bofton, having 1800 inhabitants.—After Norwich, having 1363 inhabitants. Add—Alfo, a town of Hillfborough county, New Hampfhire, having 416 inhabitants.—Alfo, a townfhip of Franklin county, in Ohio, having 450 inhabitants.

SHARP, Granville, col. 3, l. 33, for taken up on *r.* taken upon.

SHAT-UL-ARAB, l. 16, *r.* Bamifhere and Mefene; l. 20, *r.* Hafar.

SHENANGO. Add—Alfo, a townfhip of Mercer county, having 634 inhabitants.—Alfo, a townfhip of Beaver county, having 679 inhabitants.

SHEPEY. Add—The largeft parifh in this ifland is that of Minfter, which in 1811 contained 840 houfes, befides 20 that were not finifhed, and 5318 perfons; *viz.* 2596 males, and 2722 females: 87 families being employed in agriculture, and 1163 in trade, manufactures, or handicraft.

SHILLINGSTONE, or Shilling Okeford, a parifh in the weft-divifion of Shanfton, in the county of Dorfet, which in 1811 contained 75 houfes, and 385 inhabitants; 163 males, and 222 females. On the right of the village are two high hills, called Hood and Hawkledon, on which are the remains of an ancient Roman encampment.

SHOES, col. 3, l. 29 from bottom, for felt *r.* left.

SHOREA, in *Botany*, in honour of fir John Shore, lord Teignmouth, late governor of Bengal.—Roxb. Corom. v. 3. 9. Gærtn. v. 3. 48. t. 186.—Clafs and order, *Polyandria Monogynia*. Nat. Ord. *Guttiferæ*, Juff.

Gen. Ch. Calyx of five imbricated leaves, fubfequently enlarged, permanent. Petals five. Capfule fuperior, of one cell and one valve. Seed folitary.

1. S. *robufta*. Saul-tree. Roxb. t. 212.—Found on the fkirts of the northern mountains of India. A majeftic *tree*, whofe timber is much ufed, and next in value to the teak, (fee Tectona,) being ftronger, though far lefs durable. *Leaves* alternate, ftalked, ovate, entire, acute, fmooth, from four to eight inches long. *Panicles* downy, axillary and terminal, of numerous, pale yellow, ftarry *flowers*, not an inch wide. *Capfule* accompanied by five oblong, ribbed, unequal wings, formed of the *calyx*. This genus is nearly allied to Dipterocarpus; fee that article.

SHORT Creek, in *Geography*, a townfhip of Jefferfon county, in Ohio, having 1890 inhabitants.

SHORT-SIGHTEDNESS, l. 21, add—For Mr. Ware's obfervations on this fubject, fee Spectacles.

SHREWSBURY, in America, l. 8, add—of whom 577 are flaves. At the end, add—Alfo, a townfhip of Lycoming county, containing 294 inhabitants.

SHROUD, l. 3, add—but the ftatute for this purpofe has been repealed.

SHUKUSKU, *r.* or Shukashu.

SHUSTER, l. 24, for magnitude *r.* magnificence.

SIBH, a diftrict of the Perfian empire, in the province of Mekran, confifting of an extenfive plain, governed by a chief, who refides in a fmall town of the fame name. The country, almoft deftitute of water, though a river, nearly dry, flows through the centre of the plain, is, generally fpeaking, barren, if we except fome groves of date-trees which formerly grew in the bed of the river.

SIDNEY, *Sir* Philip, in *Biography*, the eldeft fon of fir Henry Sidney, by a daughter of the duke of Northumberland, was born at Penfhurft in Kent, in the year 1554. He was named Philip in compliment to the king of Spain, the hufband of queen Mary. In very early life he manifefted a fedate ftudious difpofition; and he fedulously improved every advantage for gaining knowledge, which he enjoyed, firft at Shrewfbury fchool, and afterwards at Oxford, where he was entered at Chriftchurch college in 1569, and alfo at Cambridge. At the age of 18, the queen, according to the then exifting cuftom, granted him a licence to travel abroad; and he firft vifited Paris, where he was introduced, by his maternal uncle, the earl of Leicefter, to fir Francis Walfingham, the Englifh ambaffador. Charles IX. who was then king of France, wifhing to fhew refpect to Leicefter, and probably with the perfidious defign of lulling into fecurity the Proteftant party in France, previoufly to the horrid maffacre of St. Bartholomew's, appointed Sidney one of the gentlemen of his bed-chamber. When the fatal day arrived, Sidney, together with feveral of his countrymen, found a refuge in the houfe of the Englifh ambaffador. Soon afterwards he purfued his tour to Germany; and at Frankfort formed an intimate acquaintance and friendfhip with Hubert Languet, then refident for the elector of Saxony, whofe communications were fingularly ufeful to our young traveller. After vifiting Vienna, Hungary, Venice, and Padua, in company with his friend Languet, he returned through Germany and Flanders, and arrived in England in 1575, with thofe accomplifhments, and with his moral principles in untainted purity, which rendered him the admiration and delight of his countrymen. In the following year, being only in the 22d year of his age, he was difpatched as ambaffador to the court of Vienna, to condole with and congratulate the new emperor Rodolph II.; and entrufted with a commiffion to engage the Proteftant princes of Germany in a league with each other, or with England. He was alfo entrufted to demand the repayment of the fum advanced by Elizabeth to the elector palatine. In the difcharge of thefe feveral trufts, he acquitted himfelf with fingular reputation, and with fatisfaction to all the parties concerned in the objects of his embaffy. After his return, he received no other honorary recompence befides the office of cup-bearer to the queen. With a temper fomewhat irafcible, and a high fenfe of honour, blended in fome degree with the fpirit of chivalry, few characters in that age were fo unexceptionable as that of Sidney. Of his difinterefted patriotifm, we have a ftriking inftance in his remonftrance addreffed to queen Elizabeth on her projected marriage with the duke of Anjou; and fuch was the eftimation in which he was held by the queen, that fhe did not manifeft her difpleafure againft Sidney, though others fuffered

fered for their interference. Actuated by the ſpirit of chivalry, he exhibited his ſkill in military manœuvres at a tournament held, in 1580, in honour of the queen; and in the ſame year, he aſſerted his rank as a gentleman, againſt an inſult offered him at a tennis-court by Vere, earl of Oxford. In order to compoſe his mind, which had been thus diſquieted, he retired to the houſe of his brother-in-law, the earl of Pembroke, at Wilton, and engaged in the compoſition of his well-known romance, called "Arcadia," which was not publiſhed till after his death. In 1581 his name appears as one of the knights of the ſhire for the county of Kent, and as one of the committee for drawing up acts, with a view to the ſecurity of the kingdom againſt the Pope and his adherents. His "Defence of Poetry," written about this time, contributed more to his literary reputation than Arcadia. Of this treatiſe one of his biographers ſays, that it may be "conſidered as the earlieſt piece of criticiſm in the Engliſh language worthy of attention, and reckoned by ſome the beſt written of his works. In a ſimple and unaffected ſtyle, it diſplays much learning and judgment, and a true reliſh of the excellencies of that art which he undertakes to patronize and illuſtrate." In the year 1583, he married the only daughter and heireſs of ſir Francis Walſingham, a lady, as it is ſaid, of great beauty and merit. On occaſion of being nominated by the prince palatine of the Rhine his proxy at the inſtallation of the garter in 1584, he received from the queen the honour of knighthood; an honour which ſhe was not laviſh in conferring. When ſir Francis Drake was projecting a ſecret naval expedition, ſir Philip Sidney wiſhed to join him, and with this view to equip a land and naval armament againſt the Spaniſh ſettlements in America; but the queen interpoſed, and abſolutely prohibited the execution of his deſign. Of his nomination as a candidate for the vacant crown of Poland, upon the death of Stephen Bathori in 1585, we ſhall ſay nothing; as one of his biographers has ſtated ſeveral particulars, which render the fact very improbable. In the year juſt mentioned, ſir Philip had a ſeat in the privy council; and queen Elizabeth determining to aſſiſt the Low Countries in their revolt, on condition of their putting into her hands ſome cautionary towns, indulged his martial diſpoſition by appointing him governor of Fluſhing. As ſoon as he had taken poſſeſſion of his charge, he was made colonel of all the Dutch regiments, and captain of a band of Engliſh ſoldiers. He was ſoon joined by his uncle Leiceſter, as general of the auxiliary forces, and ſir Philip was appointed general of the horſe, under his command. It ſoon appeared that Leiceſter was unfit for the truſt repoſed in him; his nephew was diſſatisfied, and endeavoured to allay the diſcontents which prevailed among the ſubordinate commanders. Sir Philip in his firſt exploit, which was the ſurpriſe and capture of Axell, in July 1586, without the loſs of a man, was ſingularly ſucceſsful; but in the month of September he fell in with a convoy ſent by the enemy to Zutphen, and having one horſe ſhot under him, he mounted another; and while charging the foe with great vigour, he received a muſket bullet above the knee, which broke the bone and penetrated deep into the thigh. On his way from the field to Leiceſter's camp, whither he was conveyed, he found himſelf faint and thirſty, and called for water; but as he was preparing to drink, he obſerved a ſoldier in the agonies of a mortal wound; he reſigned the draught to him, with an expreſſion which entails permanent honour on his memory: "This man's neceſſity is ſtill greater than mine!" Upon his arrival at Arnheim a mortification enſued, and on the 17th of October, after exhibiting the moſt unaffected piety, exemplary compoſure, and ſelf-poſſeſſion, he expired with tranquillity at the early age of 32 years. His death was univerſally regretted by his enemies as well as friends, and abroad as well as at home. The queen directed his body to be brought to London, and after lying in ſtate, he was interred with all the ſolemnity of a public funeral in St. Paul's cathedral; and although no monument was erected over his remains, James, king of Scotland, compoſed an epitaph to celebrate his memory, and both univerſities furniſhed ſome collections of verſes to record his fame. But his name will ever live in the records of hiſtory, as "one of thoſe who have reflected the higheſt honour on his country." Of his "Arcadia," we ſhall merely obſerve, that it was one of the earlieſt ſpecimens of grave or heroic romance; that it was left in ſcattered fragments of MS., which his ſiſter collected and publiſhed; and from this circumſtance, it was denominated "The Counteſs of Pembroke's Arcadia." It became very popular, and was tranſlated into foreign languages. Lord Orford (Horace Walpole) ſpeaks of it very contemptuouſly; but Dr. Zouch has more candidly and more juſtly appreciated its value. Biog. Brit. Zouch's Mem. of Sir Philip Sidney. Gen. Biog.

Sidney, or Sydney, Algernon, the ſecond ſon of Robert, earl of Leiceſter, by Dorothy, eldeſt daughter of Henry Piercy, earl of Northumberland, was born in 1621 or 1622, and carefully educated under his father's inſpection. In early life he was deſtined to the military profeſſion, and in 1641 he had a commiſſion in his father's own regiment of horſe, when he was appointed lord-lieutenant of Ireland. During the rebellion in that kingdom he entered immediately into active ſervice, and had many opportunities of exhibiting his courage. In 1643, upon the commencement of the war in England between the king and parliament, he obtained permiſſion to return. He and his brother, upon their landing, were intercepted, and placed under guard: and the king, conceiving (juſtly, as the event proved) that they had been taken by their own contrivance, was much offended; and not without reaſon, for they both joined the parliamentary army. In 1644, the earl of Mancheſter appointed Algernon to the command of a troop of horſe in his own regiment; and in the following year, Fairfax promoted him to the colonelcy of a regiment of horſe. Having been preſent in ſeveral actions, he was entruſted with the government of Chicheſter. In 1646 he accompanied his brother to Ireland, and was advanced to the poſt of lieutenant-general of the cavalry and governor of Dublin. For his ſervices in that kingdom he received the thanks of parliament, and returning to his own country was made governor of Dover. Although he was nominated in 1648 a member of the high court of juſtice for the trial of the king, he was neither preſent when ſentence was pronounced, nor did he ſign the warrant for his execution. This part of his conduct, it is ſuppoſed, was owing to the particular requeſt of his father; for it appears, from his general conduct, that his principles would not induce him to condemn this act. When he was afterwards a voluntary exile in Denmark, and charged by his father with the violence of his political ſentiments, his father writes to this purpoſe: "It is ſaid that the univerſity of Copenhagen brought their *album* to you, deſiring you to write ſomething therein, and that you did *ſcribere in albo* theſe words:

"Manus hæc, inimica tyrannis,
Enſe petit placidam ſub libertate quietem,"

and put your name to it; alſo, that a miniſter, being there in company with you, ſaid, 'I think you were none of the late king's judges, nor guilty of his death.' 'Guilty!' ſaid you; 'do you call that guilt? Why, it was the juſteſt and braveſt action that ever was done in England, or any where

where elfe.'" Confiftently with the fentiments avowed on this occafion, Sidney actually oppofed the defigns of Cromwell; and he afterwards refufed to act under him and under his fucceffor Richard. During this period he paffed a retired life at Penfhurft, and employed himfelf, as it is faid, in writing his Difcourfes on Government. But when the Long Parliament regained its power, Sidney hoping for the eftablifhment of a republic, to which form of government he was ardently attached, became an active partifan, and was nominated one of the council of ftate. He alfo accepted the office of one of the commiffioners for mediating a peace between Denmark and Sweden, and was actually engaged in this embaffy at the period of Charles II.'s reftoration. Although he was folicited by general Monk and others to return to England, he could repofe no confidence in the royal party, but remained in exile for feventeen years, finding that the few fupplies which he received from home were infufficient to fupport him in a manner fuitable to his birth and rank. He was, however, treated with refpect and civility in various places, and particularly at Rome; and he employed his many leifure hours in making addition to the ample ftock of knowledge which he had already acquired. In 1677 his father, being advanced in life, was anxious to fee him, and employed his intereft in obtaining the king's permiffion for his return, to which permiffion was annexed a pardon for all his paft offences. When he afterwards joined in cabals againft the court, he incurred the cenfure of thofe who were difpofed to take offence; and Mr. Hume has charged him with acting counter to the moral principles of gratitude and with a breach of faith: others, however, have vindicated him, alleging that unconfcious of guilt he might confider the royal permiffion to return, after fo long an abfence, as a reparation of injuftice rather than an act of clemency, and that perfonal obligation ought not to influence his public conduct, when he conceived the great interefts of his country in danger. At the time of his return, parliament was urging the king to commence a war with France; but Charles, being a penfioner of the French court, wifhed from felfifh motives to avoid it; but as he was actuated by no found principles, it was apprehended that he would appear to concur with the wifhes of the nation, that he might have a plea for raifing fupplies, for his own perfonal gratification, in the profecution of his pleafures or his defigns to render himfelf arbitrary. The Englifh patriots were averfe from war, and fome of their leaders intrigued with Barillon, the French ambaffador, for preventing it. In the lift of thofe perfons in England who were at this time penfioners in France, the name of Sidney appears. When this difcovery was made by fir J. Dalrymple's publication of Barillon's papers, the friends of liberty were aftonifhed and grieved; and they hefitated in admitting this difhonourable charge. In vindication of Sidney fome have fuggefted, that Barillon falfified his accounts of the money with which he had been entrufted; whilft others have fatisfied themfelves with that perfuafion of Sidney's honour and integrity which was founded on his general conduct, and with the affurance that he always adopted and purfued thofe political meafures which appeared to him, all circumftances confidered, moft beneficial to his country. Upon his father's death, he joined the oppofition party without difguife, and offered himfelf for a feat in parliament; but he was twice defeated by the influence of the court. Thus exafperated, and apprehending the liberty of his country to be in danger, as well as dreading a popifh fucceffor, the ardour of his mind urged him to affociate with the duke of Monmouth and his party; and in the hiftory of the Rye-houfe plot he was charged with being one of fix who were promoting an infurrection. But the part which he was fuppofed to have taken in a confpiracy for affaffinating the king was the plea for arrefting him, together with Ruffell and feveral others, in June 1683. When lord Ruffell was facrificed, the next victim felected by the court was Sidney; and he was brought to trial for high treafon, before that judge whofe infamous character is indelibly recorded in the page of hiftory, chief-juftice Jefferies. Lord Howard, who was a difgrace to the title he bore and to that rank in fociety with which he was connected, was the only direct evidence againft him; but the law required two witneffes for conviction on a charge of treafon. In order to fupply this defect, the attorney-general produced fome paffages from difcourfes found in manufcript in his clofet, in which the writer maintained the lawfulnefs of refifting tyrants, and his preference of a free to an arbitrary government; and without decifive proof that they were written by him, or that they were even communicated to any living perfon, this kind of evidence was admitted, in defiance of law and common fenfe, as equivalent to the teftimony of a fecond witnefs. His defence was of no avail, and a fervile jury pronounced him guilty. From refpect to his family, the difgraceful part of his fentence was omitted, and exchanged for beheading. On the 7th of December he was executed on Tower-hill, at the age of about fixty-one years, delivering to the fheriffs a paper which proved the injuftice of his condemnation, and offering a prayer for that "old caufe" in which he had been from his youth engaged. This paper was afterwards printed, and made great impreffion on the public mind. It is given at full length in the Memoirs of his Life. He fuffered with the firmnefs, as it is faid, of an old Roman. After the revolution one of the firft acts was the reverfal of his attainder, and his name has been held in high efteem and veneration by all the avowed friends of free government. The following fketch of his character is given by bifhop Burnet. "He was a man of moft extraordinary courage, fteady even to obftinacy, fincere, but of a rough and boifterous temper that could not bear contradiction. He feemed to be a Chriftian, but in a particular form of his own; he thought it was to be like a divine philofophy in the mind, but he was againft all public worfhip, and every thing that looked like a church. He was ftiff to all republican principles, and an enemy to every thing that looked like monarchy. He had ftudied the hiftory of government in all its branches beyond any man I ever knew; and had a particular way of infinuating himfelf into people that would hearken to his notions, and not contradict him." Of this character, it is faid, in the Notes to the Memoirs of his Life, that it was roughly and inaccurately drawn. Sidney's "Difcourfes on Government" were firft printed in 1698, fol. reprinted in 1704 and 1751, and in 4to. 1772 at the expence of Thomas Hollis, efq., with his letters, trial, and memoirs of his life prefixed. Lord Orrery fays of them, "they are admirably written, and contain great hiftorical knowledge, and a remarkable propriety of diction; fo that his name, in my opinion, ought to be much higher eftablifhed in the temple of literature than I have hitherto found it placed." Biog. Brit. Gen. Biog. Memoirs, &c. prefixed to Hollis's edition.

SIFEED Rook. See Rood.

SILENI, l. 20, for faccho *r.* Jaccho; l. 33, for fecond *r.* fixth.

SILICA, Silicon, in *Chemiftry.* From the recent experiments of Berzelius and Stromeyer, the bafis of filicon does not appear to be a metal as formerly fuppofed, but a fubftance analogous to *boron* and *carbon;* hence it has been named

named *filicon*. Little is known, however, of the nature of this fubftance, except that it is dark-coloured, and will bear a confiderable heat without undergoing change, and that it decompofes water, and is converted into filica when brought in contact with that fluid. It is alfo capable of combining with iron, and probably other metals. Dr. Thomfon eftimates the weight of the atom of filicon, from the experiments of Berzelius and Stromeyer above-mentioned, at 10, and of filica at 20. The fame chemift alfo confiders filicon to be an acid, and propofes for it the name of *filicic* acid, in which cafe its compounds muft be denominated *filicates*.

SILVER, in *Chemiftry*. Dr. Thomfon, from the moft recent experiments on this metal and its falts, eftimates the weight of its atom at 137.5, that of oxygen being 10. See ATOMIC *Theory*.

SILVER *Ores*. See SILVER, and MINERALOGY, *Addenda*.

SILURES, col. 2, l. 32, *r.* Wifk or Ufk.

SIMIA FATUELLUS, l. 1, for tailles *r.* long-tailed.

SITACA. Add—twelve geographical miles below Bagdad, and nearly oppofite to the embouchure of the Dealla river.

VOL. XXXIII.

SITTINGBOURNE, a town and parifh of Kent, 40 miles from London, in the road to Canterbury; contained, in 1811, 230 houfes, and 1362 perfons; 633 being males, and 729 females.

SKIDDAW, l. 15, after fea, add—which differs little from 3017 feet, the barometrical meafurement of Mr. W. Allen, according to the method propofed by fir H. Englefield. (See Tranf. of the Geol. Soc. vol. iv. part 2.)

SLATE-SPAR. See MINERALOGY, *Addenda*.

SLAVE, col. 2, l. 40, for Almighty *r.* A mighty. Col. 7, l. 19 from bottom, for American *r.* African.

SLAVE-TRADE, *Abolition of the*, col. 2, l. 12, for principalled *r.* principled.

SLIDING-RULE. Add—Mr. Bevan has lately publifhed in the Philofophical Magazine an ingenious modification of the fliding-rule. By the inverfion of the flider all the ufual operations are performed, together with the extraction of the fquare root, and factors of any given number are found by fimple infpection. At the fame time, the inftrument is reduced to half its ufual fize.

SMITH, in *Geography*, l. 2, add—of whom 2201 are flaves.

SNORING. Add—See LARYNX.

SNOW, col. 2, l. 3 from bottom, *r.* earth, and of bodies on its furface, is prevented from efcaping by radiation to the heavens during ftill or dewy nights. The caufe of this additional cold does not, indeed, conftantly operate; but its prefence, during only a few hours, might effectually deftroy plants, which now pafs unhurt through the winter. Moreover, while low vegetable productions are prevented, by a covering of fnow, from becoming colder than the atmofphere in confequence of their own radiation, the parts of trees and tall fhrubs, which rife above the fnow, are little affected by cold from this caufe: for their outermoft twigs, now that they are deftitute of leaves, are fo fmall, that they will very feldom become more than 2° colder than the atmofphere. The larger branches too, which, if fully expofed to the fky, would become colder than the extreme parts, are, in a great degree, fheltered by them; and, in the laft place, the trunks are fheltered both by the fmaller and larger parts, not to mention that the trunks muft derive heat, by conduction through the roots, from the earth kept warm by the fnow. In a fimilar way is partly to be explained, the manner in which a layer of earth or ftraw preferves vegetable matters in our own fields, from the injurious effects of cold in winter. It may be remarked, however, that a thick covering of fnow, while it renders the furface of the earth warmer than it would otherwife be, muft occafion the lower atmofphere to be colder, by preventing the paffage of the heat of the ground to the air, either by radiation or conduction. Wells's Eff. p. 258. See DEW and HEAT.

SNOWDON, l. 17, after fea, add — according to Mr. W. Allen's barometrical meafurement, 3595,9 feet.

SOAP-STONE. See MINERALOGY, *Addenda*.

SODA. See SODIUM. Add—under NATRON, l. 5, *r.* Natron, from an erroneous fuppofition of its being of the nature of nitre, has been by many. Col. 2, l. 35, *dele* vegetable alkali. Col. 4, l. 33, for a further account of barilla, fee CARBONATE *of Soda*. Under the article LEATHER, l. 17, for a fpecies of falt-petre *r.* a CARBONATE *of Soda*; which fee.

SODA, *Sodium*, in *Chemiftry*. From the moft recent and correct experiments, the weight of the atom of fodium has been eftimated by Dr. Thomfon at 30, and confequently the weight of the atom of foda at 40, that of oxygen being 10.

SODAIC POWDERS, denote powders which are ufed as a fubftitute for foda-water. Profeffor Brande, in his courfe of chemical lectures at the Royal Inftitution, took occafion to obferve, that though thefe powders produce an effervefcence when diffolved, arifing from the difengagement of carbonic acid, the folution is very different from foda-water, both in its conftituent parts and its properties. Thefe powders confift of an alkaline carbonate, either of potafh or foda, and a concrete acid, reduced to powder. The acid, though fold as the citric, is in reality the tartaric acid, produced from the fubftance known as cream of tartar. When the powders are diffolved, the tartaric acid unites with the alkali, and the carbonic acid, or fixed air, immediately efcapes, occafioning a momentary effervefcence. A falt is formed in the folution, called by chemifts the tartrate of potafh, or foda: if the former alkali has been ufed, and the acid is in excefs, the falt formed is nearly infoluble, and has a harfh tafte, and an irritating effect on the ftomach. Thus, a quantity of alkaline tartrate is taken into the fyftem, which rather tends to increafe than remove obftructions, and in many inftances muft be highly injurious. Soda-water, if prepared in the beft manner, fhould contain a very fmall portion of carbonate of foda, which has a tendency to correct acidity on the ftomach; it fhould contain alfo about eight times its own bulk of carbonic acid gas, part of which is in a ftate of loofe combination with the water. A confiderable quantity of this gas, however, appears to be united by a ftronger chemical affinity, and will remain in the water fome hours after it is poured out. This gas, acting as a folvent of all the different earths, and various other fubftances, gives to the foda-water a more diluent and deobftruent efficacy, than is poffeffed by common water; and to this caufe we may afcribe the good effects of foda-water in removing bile and calculary concretions. The carbonic acid, in its concentrated ftate, as it exifts in foda-water, is a more powerful folvent of metallic fubftances than is generally fuppofed. On which account the manufacture of foda-water, in veffels of copper, or other metals, ought carefully to be avoided, and too great caution cannot be obferved by thofe who are in the habit of drinking soda-water, to have it free from any metallic impregnation, or improper admixture.

SODALITE. See MINERALOGY, *Addenda*.

SOMERSET, l. *6*, *r.* 14,725.

SOONTAARS, a wild and unlettered tribe of Hindoos, who inhabit the district of Ramgur, the least civilized part of the Company's possessions, and who have reduced the detection and trial of persons suspected of witchcraft to a system. For an account of their practices, we refer to the fourth volume of the Asiatic Researches, p. 343. See BENARES.

SORBIC ACID, in *Chemistry*. This acid was so named by Mr. Donovan its discoverer, because obtained from the berries of the *mountain ash* (formerly denominated *sorbus aucuparia*, but now *pyrus aucuparia*). The juice of the ripe berries is to be strained and mixed with a filtered solution of acetate of lead. The precipitate is then to be separated by a filter, and washed in cold water. A large quantity of boiling water is then to be poured upon the filter, and allowed to pass through the precipitate into jars. After some hours this liquid becomes opaque, and deposits crystals of great lustre and beauty. These crystals are to be boiled for half an hour with 2.3 times their weight of sulphuric acid, specific gravity 1.090, supplying water as fast as it evaporates, and taking care to keep the mixture constantly stirred. While still hot a stream of sulphuretted hydrogen is to be sent through the resulting liquid, which will precipitate the lead, and leave the sorbic acid in solution in the water.

Sorbic acid thus obtained is a transparent colourless inodorous fluid, soluble in alcohol, and in any portion of water. It does not crystallize, nor is it volatile. Its taste is exceedingly acid, and it does not appear to undergo much change when kept.

The *sorbates* of potash, soda, and ammonia, are crystallizable salts, containing an excess of acid. They are soluble in water, but not in alcohol. The *sorbates* of barytes and lime are neutral and white insoluble powders. The sorbic acid combines with lead in three proportions. The *subsorbate* is a hard mass or a gritty powder. The *sorbate* is a white powder, which by solution in sorbic acid may be obtained crystallized in beautiful silvery crystals. The *supersorbate* has a sweet taste, and is soluble in water. The other *sorbates* are little known, and do not seem to be very interesting.

There appears to be a great resemblance between the *sorbic* and *malic* acids. Indeed it has been asserted that they are identical. The *malic* acid having recently been obtained in a more pure state than formerly, has enabled chemists to investigate its properties more completely, and in this pure state it is said in no circumstance to differ from *sorbic* acid.

SOSOS, a Chaldæan period of 60 years, which doubled gave the return of the lunar months to within the 20th part of a month. By multiplying this cycle as many times as are necessary to obtain the precise returns of the sun and moon to the same points of the heavens, astronomers found a period of 600 years, called the *Neros ;* which see.

SOUND, for Roberts *r.* Robarts.

SOUTHAMPTON, in *Geography*, a township of Cumberland county, in Pennsylvania, having 700 inhabitants.

SOUTH-END. In 1811, the parish of Prittlewell with Milton contained 285 houses, and 1541 persons ; 759 being males, and 782 females.

SOUTHWARK, EAST, a township of Pennsylvania, in Philadelphia county, having 726 inhabitants.

SOUTHWARK *Bridge*, an elegant structure designed by Mr. Rennie, and forming a communication between the city of London and the borough of Southwark, in nearly a straight line between Guildhall and the Bank-side. It consists of three grand arches ; the centre arch being 240 feet in span, and each of the side arches being 210 feet. The arches are composed of cast-iron, and the piers and abutments of stone. The estimate of the expence was 287,000*l.*, and that of the tolls, on the supposition that London bridge should be rebuilt, was conjectured to amount annually to 50 or 60,000*l.* The first stone of this bridge was laid in 1815, and it was opened for passengers and carriages in February 1819.

SOWANS, a nutritious article of food prepared in Scotland from the husks of oats, by a process not unlike that by which common starch is made. The husk of the oat after having been separated by the sieve still retains a considerable portion of farinaceous matter. It is mixed with water, and allowed to remain till the water becomes sour. The whole is then thrown upon a sieve ; the milky water passes through loaded with starchy matter, which soon subsides. The sour liquor is poured off, and about an equal quantity of fresh water added. This mixture when boiled forms a very nourishing article of food, and the portion of the sour water which still adheres to the starch gives the whole a pleasant acidity.

SPANGLES, *paillettes*, Fr. are small thin round leaves of metal, pierced in the middle, which are sewed on garments, &c. as ornaments. They are prepared by first twisting wire round a rod into the form of a screw ; this is then cut into single spiral rings, like those used by pin-makers in forming heads to their pins ; and these rings being placed upon a smooth anvil are flatted by a smart stroke of the hammer, so that a small hole remains in the middle, and the ends of the wire which lie over each other are closely united. The smaller spangles were first made in the French gold and silver manufactories, and imitated in Germany, for the first time, in the beginning of the 18th century. Beckmann's Hist. of Inventions, vol. ii.

SPARROW, in *Agriculture*. Add—It has been suggested, however, that the mischief done by sparrows may be fully compensated by their usefulness in destroying caterpillars ; a single pair has been found to consume 40,000 in one season, in feeding their young. We may here add, that in a district in which great pains had been taken to extirpate the moles every vegetable was for a considerable time destroyed by cockchaffers, which grubs had been thus preserved by the short-sighted policy of the farmers.

SPARTA, l. 13, for country *r.* city.

SPARTA, col. 2, l. 3, containing 179 inhabitants.

SPAVIN. Add—In healing the blood spavin, Mr. Denny recommends repeated blistering, and afterwards a compress of folded linen, moistened in the following lotion, and confined by a long bandage : Take 4 oz. of sal ammoniac, 2 oz. of acetated ceruse, 2 quarts of vinegar, and 4 of water, mix them. The usual method of treating the bone spavin is by blistering and firing.

SPECULUM, col. 15, l. 23 from bottom, for cord *r.* card.

SPEECH. See LARYNX.

SPERMACETI, *Chemical Properties of*. See CETIC *Acid*.

SPERMADICTYON, in *Botany*, from σπερμα, *seed*, and δικτυον, *a net*, because of the reticulated tunic of the seeds.—Roxb. Coromand. v. 3. 32.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juss.

Eff. Ch. Corolla funnel-shaped. Calyx in five deep awl-shaped segments, permanent. Stigma five-cleft. Capsule inferior, of one cell and five valves. Seeds five, each in a latticed tunic.

1. S. *suaveolens*,

1. S. *suaveolens*. Fragrant Net-seed.—Discovered by Mr. William Roxburgh, on the Rajamahl hills. *Stem* erect, shrubby, with opposite branches; downy when young. *Leaves* opposite, stalked, with triangular intermediate *stipulas*, lanceolate, acute, entire, near a span long, smooth. *Flowers* white, an inch long, delightfully fragrant, copious, in numerous terminal tufts. A very curious and distinct genus, which we hope to see introduced from the Calcutta garden into the stoves of England.

SPHAGEBRANCHUS. See Synbranchus.

SPRIGE, or Sprigg.

SPRINGS. Add—See Uxahver.

STAMMERING. See Larynx.

STAPHYLINUS, l. 5, add—The larvæ are subterraneous, and much resemble the complete animals; l. 15, add—Mr. Marsham, in his "Entomologia Britannica," enumerates no fewer than 87 British species.

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STARCH, *Chemical Composition of*. Starch has been analysed by three different experimentalists. The following were the results:

	Gay Lussac and Thenard.	T. de Saussure.	Berzelius.
Hydrogen	6.77	5.90	7.066
Carbon	43.55	45.39	43.481
Oxygen	49.68	48.31	49.453
Azote		0.40	
	100.	100.	100.

Berzelius employed potatoe starch. The other experiments were made with the starch of wheat.

Kirchhoff, a Russian chemist, found, that by boiling starch with dilute sulphuric acid it is converted into sugar; and M. T. de Saussure has recently discovered, that this change takes place spontaneously when boiled starch is exposed for a considerable length of time to the action of the air.

STATISTICS, a term applied to the topography of a country, and comprehending its population, policy, manufactures, trade, and a variety of other circumstances.

STEÄRIN, in *Chemistry*. A name given by Chevreul to a substance existing in animal tallows or fats. It may be separated by alcohol, or simply by pressure. Braconnot used the following method: The oil if fluid was congealed, and in this state was subjected to strong pressure between folds of blotting paper. The elaïn (see Elaïn) was imbibed by the paper while the steärin remained behind in a solid state.

Steärin thus obtained is white, brittle, and something like wax in appearance. It crystallizes in small needles. It has little or no smell. It is tastelefs, and produces no effect on vegetable blues. It melts, as obtained from different fats, between 109° and 120°; that from the fat of the duck being most readily melted, and that from human fat the least. It is soluble in water, and combines with the alkalies, forming soaps.

STEUBEN, l. 15, add—of whom, in 1810, 87 were slaves.

STIPPLING, l. 7 and 9, *r.* pecks.

STIRLINGSHIRE. In 1811, this shire contained 8910 houses, besides 55 unfinished, and 58,174 persons (including 803 local militia); 27,745 being males (militia included), and 30,429 females: 2425 families being employed in agriculture, and 5912 in trade, manufactures, and handicraft.

STIRRUP. At the close, add—The Roman manners required that young men and expert riders should be able to vault on horseback without any assistance. (Virgil, Æneid, l. 12. 288.) In many public places, particularly highways, stones were erected, to which a rider could lead his horse, that he might mount with greater facility. Such stones Gracchus caused to be raised (Plutarch. de Vit. Gracchi); and they were to be found in many cities in the 16th century, especially near the council-house, for the convenience of the members of the council, who at that time did not ride in coaches. It was usual also to have portable stools, which were placed close to the horse when persons wished to mount: and this gave rise to the barbarous practice of making conquered generals and prisoners stoop down, that the victor might more easily get on horseback, by stepping upon their backs as upon a stool. In this ignominious manner was the emperor Valerian treated by Sapor, king of Persia. Some horses were so taught, that they kneeled until the rider mounted; and warriors had on their spears or lances a step or projection on which they could rest the foot until they got on horseback. (Strabo, lib. iii. Sil. Ital. lib. x.) See Anabathra and Anaboleus. The first certain account of stirrups, says Beckmann, (History of Inventions, vol. ii.) is in a book written by Mauritius, respecting the art of wars, about the end of the 6th century. Eustathius, the commentator on Homer, informs us, that in his time, *i. e.* the 12th century, stirrups had not become very common; but on a piece of tapestry, of the eleventh century, caused to be engraven by Montfaucon, the saddles of all the horses appear to have stirrups. However, after they became common, it was thought to be an evidence of superior dexterity to ride without them.

STOKES, in *Geography*, a township of Madison county, in Ohio, containing 267 inhabitants.

STONE *in the Bladder*. See Lithotomy, and Urinary *Calculi*.

Stone, *Mile*. See Mile-*Stone*.

Stones, *Chemical Analysis of*. See Analysis.

STONY Creek, in *Geography*, a township of Somerset county, in Pennsylvania, having 943 inhabitants.

STRAFFORD, in New Hampshire, add—divided into 31 townships, &c.

STRAINING. See Lungs.

STRAND Bridge. See Waterloo.

STRONTIAN, Strontium, in *Chemistry*, the name of an elementary substance or earth, the description of which has been omitted.

Strontian is always found in nature combined with the carbonic or sulphuric acids. (See Strontianite and Celestine.) It may be obtained pure from those minerals precisely in the same manner as *barytes* and *lime*.

Strontian thus obtained is in porous masses of a greyish-white colour. Its taste is acrid and alkaline, and it converts vegetable blues to green. Its sp. gr. according to Hassenfratz, is 1.647. It does not act so strongly on animal bodies as barytes, nor is it poisonous.

Sir H. Davy, led by analogy, subjected it to galvanic influence, and thus succeeded in separating its oxygen and obtaining *strontium*, the metallic basis of strontian. This metal is white, much heavier than water, and bears a close resemblance to *barium* in its properties: when exposed to air or thrown into water, it rapidly absorbs oxygen, and is converted into strontian.

Dr. Thomson, from the recent experiments of Stromeyer

and

and others, fixes the weight of the atom of ſtrontian at 65; from which the compoſition of its ſalts may be readily eſtimated.

The ſalts of ſtrontian require to be briefly noticed. They are in general more ſoluble than the ſalts of barytes, but leſs ſo than the ſalts of lime. Moſt of them are capable of being cryſtallized. They are precipitated by the ſulphates, phoſphates, and oxalates. Succinate of ammonia precipitates barytes, but not ſtrontian. When a piece of paper is dipped into a ſolution of a ſalt of ſtrontian, it burns with a red flame. The ſalts of ſtrontian are not precipitated by the pruſſiate of potaſh, nor are they poiſonous.

Nitrate of Strontian.—This ſalt cryſtallizes in ſix-ſided pyramidal dodecahedrons with their apexes truncated, ſo as to have the appearance of hexahedral plates with bevelled edges. Sometimes in eight-ſided priſms. It is perfectly tranſparent. It has a ſtrong pungent cooling taſte. Its ſp. gr. is 3.006. It is ſoluble in its own weight of water at 60°, and in little more than half its weight of boiling water. It is inſoluble in alcohol. It is not altered by expoſure to air. It deflagrates on hot coals. When a cryſtal of nitrate of ſtrontian is put into the wick of a candle, it communicates a beautiful purple flame.

Muriate of Strontian.—This ſalt cryſtallizes in long ſlender hexagonal priſms. Its taſte is ſharp and penetrating. Its ſp. gr. is 1.4402. It is ſoluble in leſs than its weight of cold water, and in any quantity in boiling water. It is ſoluble in about twenty-four parts of cold alcohol. The cryſtals do not deliqueſce on expoſure to the air, except in very damp weather.

Carbonate of Strontian.—This, when precipitated, is a white powder without taſte or ſmell, and ſoluble in about 1536 parts of boiling water. Its ſp. gr. is about 3.66, and it is not altered by expoſure to the air.

Sulphate of Strontian.—This ſalt is taſteleſs, ſoluble in 3840 parts of boiling water; readily ſoluble in ſulphuric acid when aſſiſted by heat, and poſſeſſes other properties very analogous to the ſulphate of barytes.

Phoſphate of Strontian.—This ſalt is likewiſe taſteleſs, inſoluble in water, and not altered by expoſure to the air.

Acetate of Strontian.—This is ſoluble in little more than twice its weight both of cold and hot water. It may be cryſtallized, and the cryſtals are not altered by expoſure to the air. It renders vegetable colours green.

The other ſalts of ſtrontian do not in general poſſeſs any remarkable properties. The *oxalate*, *tartrate*, *ſuccinate*, and *citrate* of ſtrontian, are all more or leſs ſoluble in water; the *oxalate* being the leaſt ſoluble, and the *citrate* the moſt. The *malate* of ſtrontian is more ſoluble in water than the *malate* of barytes.

STROUD, in *Geography*, a pariſh of Kent, part of which is included within the juriſdiction of the city of Rocheſter (ſee Rochester); and the other part, in 1811, contained 242 houſes, and 1394 perſons; 718 being males, and 676 females.

STYLE, in *Painting*, is the manner in which a painter conceives and executes the ſubjects he adopts; or, in other words, in which he combines the various qualities of a picture. Style is properly diviſible into four diſtinct kinds, *viz.* the grand or ſublime, the beautiful, the natural, and the mean. There are indeed ſeveral varieties of ſtyle which have obtained ſpecific appellations; but they will be found upon examination to combine, in different ways, the qualities peculiar to thoſe above-mentioned; and are juſtly regarded as vicious in their nature: ſuch are the ornamental and the artificial ſtyles of art, which divert the attention of painters from the more pure application and exerciſe of their art, and lead them to adopt fictitious means of attracting attention, by contraſt and affectation, by glitter, and an idle diſplay of ſkill in workmanſhip, to the neglect of nature and juſt expreſſion, and ſometimes even of common ſenſe.

The object and aim of the grand ſtyle is to captivate the imagination. It is the only proper one for the repreſentation of grand and elevated ideas: of ſubjects which repreſent the actions of deities, or of heroes, or which relate to the higher qualities of the mind of man: the only juſt medium whereby the art of painting can embody ſuch ideas as the cultivation of thoſe qualities inſpires, and by which alone it can at all pretend to rival the grandeur and effect of heroic poetry. Its characteriſtics are ſimplicity and fulneſs of form and colour; and it is obtained, by adopting only eſſential parts, avoiding thoſe which add nothing to ſpecific character, and fixing ſolely upon thoſe general forms which particularly diſtinguiſh one race of beings, or one claſs of natural objects or of actions from another, giving them their greateſt poſſible degree of elevation, even to the verge of extravagance, in undulation of line, and fulneſs of form. This ſelection of form and of action requires an appropriate chiaro-oſcuro, arranged and combined in broad and ſimple maſſes, and painted with a ſerious tone of colour; in fact, ſuch a combination of the prime qualities of the art, as will moſt effectually unite in the production of one unmingled emotion.

The grand ſtyle does not admit attempts at illuſion, or too cloſe an imitation of natural objects; which, when carried to exceſs, neceſſarily diſturbs that ſingleneſs or ſimplicity of effect required where the object is to produce an elevated tone of thinking. It is not dependent upon ſize, but may be exhibited on a ſmall ſcale as effectually as on a large one: witneſs many of the beautiful bronzes and gems of the ancients, and the effect, as deſcribed by Statius, of the ſtatue of Hercules made by Lyſippus, which "though not more than a foot in height, filled the imagination in a manner equal to the Hercules Farneſe." Raphael's ſmall picture of the viſion of Ezekiel is alſo an effective inſtance of the truth of this aſſertion.

Style, for that word alone is adopted as ſignificatory of the grand in art, can only be acquired by thoſe who have made themſelves well acquainted with the juſt proportions and varieties of nature. Its aim being to repreſent her works with the greateſt degree of ſublimity commixed with truth, all attempts to produce it without real knowledge muſt neceſſarily lead to error, and a ſpecies of bombaſt, inſtead of expreſſion, yields only deformity. Of this, the works of Gottzius, of Spranger, and the Germans who followed them, are ſufficient evidence. And yet ſuch is the rarity of perfection in form among the human or the animal race of beings, that an artiſt whoſe aim is to produce grandeur of ſtyle muſt draw largely upon his imagination; and while he touches the verge of impoſſibility, will find that the difficulty he has to overcome is in uniting the principle on which he depends with propriety. Even Michael Angelo, great and glorious as he was among thoſe who have made it their principal object, has not unfrequently allowed himſelf to be miſled by the wiſh to aggrandiſe, and give his contours only redundancy for ſtyle; and for the ſake of a flowing and varied line, has ſometimes given forms of action to muſcles which ought to have been repreſented tranquil.

Of this ſtyle, as far as relates to form, the beſt among the ſculptures of the ancients afford the faireſt examples, particularly the torſo of the Belvidere, the head of Jupiter, the Laocoon, the Apollo, the figures on Monte Cavallo, &c. &c.; and it is a ſtriking feature in the works of Phidias,

dias, though with a chaftened impulfe, as may be feen in the Elgin marbles. Indeed it appears to have been fo perfectly underftood among the artifts of ancient Greece, that it fpread generally in a greater or lefs degree through all their productions, at leaft in thofe of fculpture; and from the few remains of painting left to us, it appears not improbable that the profeffors of that art were no lefs mafters of its principles. In latter times, among the moderns, the Florentine fchool made it their principal object of attention; and in the works of Leonardo da Vinci, Fra. Bartolomeo, and more particularly of Michael Angelo, it reached in quality nearly to a level with the tafte of thofe from whom it was adopted. Raphael attempted it in imitation of M. Angelo, and fometimes fucceeded, but it evidently was not congenial to his feeling, which inclined to the beautiful and graceful, more than to the fublime; and hence it is that his pictures of the Godhead rarely imprefs us with fentiments of an exalted nature.

The beautiful ftyle differs from the grand, in that it requires lefs force of contraft in form and action, and greater foftnefs of colour and effect. Whatever is graceful and animated, void of fuperfluous parts, and yet effentially characteriftic and pleafing in arrangement, combines to form the beautiful. Flowing lines, graceful contrafts, both in form and colour, foftened lights and fhades, and rich and harmonious colouring, are its principles: on them it depends, and every departure from them neceffarily diminifhes its quality. It is the fit medium for every fubject whofe character is adapted to afford pleafure.

As the grand ftyle confifts in an elevated view of nature, a conception of perfection almoft fuper-human, built upon the poffibilities of creative power, acting upon known and natural forms; fo the beautiful alfo muft be fought in the regions of imagination, guided by the knowledge of exifting objects, and fupported by felection from the varieties of nature. Therefore, in order to comprehend the character of beauty as applied to art, we muft confider the perfection of that art, not as confifting in mere imitation of vifible objects, but as requiring a feparation and choice of parts, an ideal perfection, which, though it belongs to the works of nature in all claffes of beings, yet is not to be found entire in any given object. Raphael, when he was painting his Galatea, faid in a letter to his patron count Baldaffare Caftiliglione, "that not being able to find perfect beauty upon earth, he was obliged to have recourfe to ideal excellence framed in his own mind." But Zeuxis took another method to produce the conftellation of perfections recognifed in his Helen; *viz.* by felecting and combining the various beauties of the moft beauteous among the virgins of Agrigentum: thus furpaffing the works of nature, with materials furnifhed by herfelf.

Beauty, it will be eafily conceived, is not confined to one given line, or fet of lines or colours, in unifon or in contact with each other. There is neceffarily one general form of the male among men and animals, and one of the female; diftinct in their character, and yet each having its appropriate degree of beauty: fo there is alfo a diftinction of form among different creatures of the fame fpecies. Apollo, Hercules, and a Gladiator, have each diftinct qualities which muft be maintained in their reprefentatives, whilft grace and beauty are given to their forms and actions: and it would be as great an abfurdity to foften each to the merely beautiful, and thus render them fimilar in form and character; as it is ignorant and grofs to truft to that which is characteriftic alone for a graceful and agreeable effect.

Though thefe, which we have fpecified, be the diftinct feparations between the grand and the beautiful ftyles in art, yet either may be rendered more perfect by the addition of the other; and when expreffion is fuperadded, then is exhibited the moft perfect difplay of the power of art: and it is this union of the beautiful and characteriftic with the grand, which conftitutes that mental and energetic application of the art of painting which elevates it above the mechanical arts, and entitles it to the higheft pretenfions, as it is addreffed to the nobleft faculties. This is that beau-ideal fo much the theme of praife and exultation among the connoiffeurs; fo univerfally felt when exhibited, fo little underftood, and fo often the foundation of the groffeft follies and deceptions among both artifts and amateurs. The former, purfuing the practice of it in theory, often become the dupes of their own imaginary fyftems; the latter more often impofe themfelves upon the world as men of worth by the mere cant of its diction, and are fcreened from difcovery by the general want of information concerning the principles and proper objects of art.

In this happy combination of beauty and grandeur the Greeks ftill remain unrivalled, as far as relates to fculpture, and perhaps fingle figures in pictures, but we have very little ground for conjecture how far they were able to conduct the principle in extended compofitions in painting. Among the moderns, perhaps Parmeggiano in his latter and more perfect works, as his Mofes and his Vifion of St. Jerome, has effected more than any other painter this defirable union; and moft likely had he lived much longer the world would have feen the perfection of the art from his hands; more particularly if he had cultivated expreffion in the fchool of Raphael, as fuccefsfully as he had the other branches of the art in thofe of Corregio and M. Angelo. "The name of Corregio," fays Mr. Fufeli, "is the fynonime of whatever is graceful and agreeable in painting;" to him we are principally indebted for chiaro-ofcuro, and that luminous and harmonious tone of colour, which fafcinates and delights the eye by its unity, blended with richnefs and variety. He may be regarded as the father of the beautiful in modern art, as M. Angelo is of the grand and fublime.

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Of the four fpecies of ftyle above enumerated, all others are and others, fixes the weight of the atom of ſtrontian at 65; from which the compoſition of its ſalts may be readily eſtimated.

The ſalts of ſtrontian require to be briefly noticed. They are in general more ſoluble than the ſalts of barytes, but leſs ſo than the ſalts of lime. Moſt of them are capable of being cryſtallized. They are precipitated by the ſulphates, phoſphates, and oxalates. Succinate of ammonia precipitates barytes, but not ſtrontian. When a piece of paper is dipped into a ſolution of a ſalt of ſtrontian, it burns with a red flame. The ſalts of ſtrontian are not precipitated by the pruſſiate of potaſh, nor are they poiſonous.

Nitrate of Strontian.—This ſalt cryſtallizes in ſix-ſided pyramidal dodecahedrons with their apexes truncated, ſo as to have the appearance of hexahedral plates with bevelled edges. Sometimes in eight-ſided priſms. It is perfectly tranſparent. It has a ſtrong pungent cooling taſte. Its ſp. gr. is 3.006. It is ſoluble in its own weight of water at 60°, and in little more than half its weight of boiling water. It is inſoluble in alcohol. It is not altered by expoſure to air. It deflagrates on hot coals. When a cryſtal of nitrate of ſtrontian is put into the wick of a candle, it communicates a beautiful purple flame.

Muriate of Strontian.—This ſalt cryſtallizes in long ſlender hexagonal priſms. Its taſte is ſharp and penetrating. Its ſp. gr. is 1.4402. It is ſoluble in leſs than its weight of cold water, and in any quantity in boiling water. It is ſoluble in about twenty-four parts of cold alcohol. The cryſtals do not deliqueſce on expoſure to the air, except in very damp weather.

Carbonate of Strontian.—This, when precipitated, is a white powder without taſte or ſmell, and ſoluble in about 1536 parts of boiling water. Its ſp. gr. is about 3.66, and it is not altered by expoſure to the air.

Sulphate of Strontian.—This ſalt is taſteleſs, ſoluble in 3840 parts of boiling water; readily ſoluble in ſulphuric acid when aſſiſted by heat, and poſſeſſes other properties very analogous to the ſulphate of barytes.

Phoſphate of Strontian.—This ſalt is likewiſe taſteleſs, inſoluble in water, and not altered by expoſure to the air.

Acetate of Strontian.—This is ſoluble in little more than twice its weight both of cold and hot water. It may be cryſtallized, and the cryſtals are not altered by expoſure to the air. It renders vegetable colours green.

The other ſalts of ſtrontian do not in general poſſeſs any remarkable properties. The *oxalate*, *tartrate*, *ſuccinate*, and *citrate* of ſtrontian, are all more or leſs ſoluble in water; the *oxalate* being the leaſt ſoluble, and the *citrate* the moſt. The *malate* of ſtrontian is more ſoluble in water than the *malate* of barytes.

STROUD, in *Geography*, a pariſh of Kent, part of which is included within the juriſdiction of the city of Rocheſter (ſee Rochester); and the other part, in 1811, contained 242 houſes, and 1394 perſons; 718 being males, and 676 females.

STYLE, in *Painting*, is the manner in which a painter conceives and executes the ſubjects he adopts; or, in other words, in which he combines the various qualities of a picture. Style is properly diviſible into four diſtinct kinds, *viz.* the grand or ſublime, the beautiful, the natural, and the mean. There are indeed ſeveral varieties of ſtyle which have obtained ſpecific appellations; but they will be found upon examination to combine, in different ways, the qualities peculiar to thoſe above-mentioned; and are juſtly regarded as vicious in their nature: ſuch are the ornamental and the artificial ſtyles of art, which divert the attention of painters from the more pure application and exerciſe of their art, and lead them to adopt fictitious means of attracting attention, by contraſt and affectation, by glitter, and an idle diſplay of ſkill in workmanſhip, to the neglect of nature and juſt expreſſion, and ſometimes even of common ſenſe.

The object and aim of the grand ſtyle is to captivate the imagination. It is the only proper one for the repreſentation of grand and elevated ideas: of ſubjects which repreſent the actions of deities, or of heroes, or which relate to the higher qualities of the mind of man: the only juſt medium whereby the art of painting can embody ſuch ideas as the cultivation of thoſe qualities inſpires, and by which alone it can at all pretend to rival the grandeur and effect of heroic poetry. Its characteriſtics are ſimplicity and fulneſs of form and colour; and it is obtained, by adopting only eſſential parts, avoiding thoſe which add nothing to ſpecific character, and fixing ſolely upon thoſe general forms which particularly diſtinguiſh one race of beings, or one claſs of natural objects or of actions from another, giving them their greateſt poſſible degree of elevation, even to the verge of extravagance, in undulation of line, and fulneſs of form. This ſelection of form and of action requires an appropriate chiaro-oſcuro, arranged and combined in broad and ſimple maſſes, and painted with a ſerious tone of colour; in fact, ſuch a combination of the prime qualities of the art, as will moſt effectually unite in the production of one unmingled emotion.

The grand ſtyle does not admit attempts at illuſion, or too cloſe an imitation of natural objects; which, when carried to exceſs, neceſſarily diſturbs that ſingleneſs or ſimplicity of effect required where the object is to produce an elevated tone of thinking. It is not dependent upon ſize, but may be exhibited on a ſmall ſcale as effectually as on a large one: witneſs many of the beautiful bronzes and gems of the ancients, and the effect, as deſcribed by Statius, of the ſtatue of Hercules made by Lyſippus, which "though not more than a foot in height, filled the imagination in a manner equal to the Hercules Farneſe." Raphael's ſmall picture of the viſion of Ezekiel is alſo an effective inſtance of the truth of this aſſertion.

Style, for that word alone is adopted as ſignificatory of the grand in art, can only be acquired by thoſe who have made themſelves well acquainted with the juſt proportions and varieties of nature. Its aim being to repreſent her works with the greateſt degree of ſublimity commixed with truth, all attempts to produce it without real knowledge muſt neceſſarily lead to error, and a ſpecies of bombaſt, inſtead of expreſſion, yields only deformity. Of this, the works of Gottzius, of Spranger, and the Germans who followed them, are ſufficient evidence. And yet ſuch is the rarity of perfection in form among the human or the animal race of beings, that an artiſt whoſe aim is to produce grandeur of ſtyle muſt draw largely upon his imagination; and while he touches the verge of impoſſibility, will find that the difficulty he has to overcome is in uniting the principle on which he depends with propriety. Even Michael Angelo, great and glorious as he was among thoſe who have made it their principal object, has not unfrequently allowed himſelf to be miſled by the wiſh to aggrandiſe, and give his contours only redundancy for ſtyle; and for the ſake of a flowing and varied line, has ſometimes given forms of action to muſcles which ought to have been repreſented tranquil.

Of this ſtyle, as far as relates to form, the beſt among the ſculptures of the ancients afford the faireſt examples, particularly the torſo of the Belvidere, the head of Jupiter, the Laocoon, the Apollo, the figures on Monte Cavallo, &c. &c.; and it is a ſtriking feature in the works of Phidias,

dias, though with a chaftened impulfe, as may be feen in the Elgin marbles. Indeed it appears to have been fo perfectly underftood among the artifts of ancient Greece, that it fpread generally in a greater or lefs degree through all their productions, at leaft in thofe of fculpture; and from the few remains of painting left to us, it appears not improbable that the profeffors of that art were no lefs mafters of its principles. In latter times, among the moderns, the Florentine fchool made it their principal object of attention; and in the works of Leonardo da Vinci, Fra. Bartolomeo, and more particularly of Michael Angelo, it reached in quality nearly to a level with the tafte of thofe from whom it was adopted. Raphael attempted it in imitation of M. Angelo, and fometimes fucceeded, but it evidently was not congenial to his feeling, which inclined to the beautiful and graceful, more than to the fublime; and hence it is that his pictures of the Godhead rarely imprefs us with fentiments of an exalted nature.

The beautiful ftyle differs from the grand, in that it requires lefs force of contraft in form and action, and greater foftnefs of colour and effect. Whatever is graceful and animated, void of fuperfluous parts, and yet effentially characteriftic and pleafing in arrangement, combines to form the beautiful. Flowing lines, graceful contrafts, both in form and colour, foftened lights and fhades, and rich and harmonious colouring, are its principles: on them it depends, and every departure from them neceffarily diminifhes its quality. It is the fit medium for every fubject whofe character is adapted to afford pleafure.

As the grand ftyle confifts in an elevated view of nature, a conception of perfection almoft fuper-human, built upon the poffibilities of creative power, acting upon known and natural forms; fo the beautiful alfo muft be fought in the regions of imagination, guided by the knowledge of exifting objects, and fupported by felection from the varieties of nature. Therefore, in order to comprehend the character of beauty as applied to art, we muft confider the perfection of that art, not as confifting in mere imitation of vifible objects, but as requiring a feparation and choice of parts, an ideal perfection, which, though it belongs to the works of nature in all claffes of beings, yet is not to be found entire in any given object. Raphael, when he was painting his Galatea, faid in a letter to his patron count Baldaffare Caftiliglione, "that not being able to find perfect beauty upon earth, he was obliged to have recourfe to ideal excellence framed in his own mind." But Zeuxis took another method to produce the conftellation of perfections recognifed in his Helen; *viz.* by felecting and combining the various beauties of the moft beauteous among the virgins of Agrigentum: thus furpaffing the works of nature, with materials furnifhed by herfelf.

Beauty, it will be eafily conceived, is not confined to one given line, or fet of lines or colours, in unifon or in contact with each other. There is neceffarily one general form of the male among men and animals, and one of the female; diftinct in their character, and yet each having its appropriate degree of beauty: fo there is alfo a diftinction of form among different creatures of the fame fpecies. Apollo, Hercules, and a Gladiator, have each diftinct qualities which muft be maintained in their reprefentatives, whilft grace and beauty are given to their forms and actions: and it would be as great an abfurdity to foften each to the merely beautiful, and thus render them fimilar in form and character; as it is ignorant and grofs to truft to that which is characteriftic alone for a graceful and agreeable effect.

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are neceſſarily compoſed: but there have been ſome few remarkable aberrations from the ordinary courſe of art, by painters of uncommon talent, which bid defiance to all claſſification, and ſtand alone in their reſpective ſpheres. Such are thoſe of Rubens and Rembrandt, of Tintoretto and Salvator Roſa, compounds of all that elevates and degrades; in which the grand and the mean, the beautiful, the natural, and the deformed, go hand in hand; the evil counterpoiſed by the good, and the whole rendered engaging, in ſpite of defects, by the ſkilful diſplay of the maſter hand which wielded the materials. Such examples, great though they are, ought not to ſerve as excuſes for inattention to ſettled principles. Who ſhall ſay, that if Rubens had been more correct in form, his works would have been leſs engaging; or, that if Tintoretto had been more pure and true in expreſſion, his productions would not have been more intereſting. (See the article PICTURE.) Combinations which will juſtify ſuch expectations have been formed, and we have ſeen them in our own great ſir Joſhua's productions, where fine form, rich and full-toned colour, and juſt chiaro-oſcuro, have been blended in ſkilful and free excution.

SUCCOWIA, in *Botany*, in honour of profeſſor Suckow, a learned botaniſt, of Heidelberg.—"Moench. Meth. 265." Brown in Ait. Hort. Kew. v. 4. 79.—Claſs and order, *Tetradynamia Siliculoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch nearly globular, beaked with the awl-ſhaped ſtyle; valves hemiſpherical, prickly; cells ſingle-ſeeded. Cotyledons folded together.

1. S. *balearica*. Minorca Succowia. Ait. n. 1. (Bunias balearica; Linn. Syſt. Nat. ed. 12. v. 2. 446. Mant. 429. Jacq. Hort. Vind. v. 2. 68. t. 144.)—Native of Minorca. Given to Kew garden, in 1781, by Dr. Brouſſonet. A hardy annual, flowering in ſummer. *Stem* branched, a foot high. *Leaves* ſmooth, elegantly pinnate and lobed. *Flowers* yellow, racemoſe.

SUFFOLK, col. 6, l. 13, add—In 1811 Suffolk contained 37,227 houſes, beſides 155 then unfiniſhed, and 234,211 perſons; *viz.* 111,988 males, and 122,223 females: 26,406 families being employed in agriculture, and 15,180 in trade, manufactures, or handicraft.

SUGAR, *Chemical Compoſition of*. See FERMENTATION.

SUGAR-*Loaf*, in *Geography*, a townſhip of Luzerne county, in Pennſylvania, having 282 inhabitants.

SULLIVAN, l. 26, inſert—including 43 ſlaves in 1810.

SULPHUR, in *Chemiſtry*. According to the moſt recent determinations, the weight of the atom of ſulphur is 20, and of ſulphuric acid 50; from which data the compoſition of the compounds of this ſubſtance can be accurately aſcertained. See ATOMIC *Theory*.

SULPHUR *Iſland*, l. 8, add—The ſulphur is collected by a few individuals reſident on the iſland ſolely for that purpoſe; ſent to the Great Loo-choo, and thence exported to Japan and China. N. lat. 27° 56′. E. long. 128° 11′. Ellis's Journal of an Embaſſy to China. 1818.

SULPHURETTED CHYAZIC *Acid*. See CYANOGEN.

SULPHURIC ACID. It is ſtated in our article on this ſubject, that ſulphuric acid cannot exiſt without water; and that the ſulphuric acid prepared at Nordhauſen from green vitriol probably differs from common ſulphuric acid by containing *leſs* water. The fact is, according to Dr. Thomſon, that the latter, when moſt concentrated, contains *no water whatever*, and conſequently a perfectly anhydrous ſulphuric acid can exiſt.

SULPHURIZED MURIATIC *Acid*, in *Chemiſtry*. The ſubſtance deſcribed under this name in the Cyclopædia is a *chloride* of ſulphur. See CHLORINE. See alſo the original article SULPHUR.

SULTANABAD. For TARSHISH *r.* TURSHISH.

SURABHI, col. 2, l. 44, for proſcribe *r.* preſcribe.

SURRY, in Virginia, l. 4, *r.* 6855.

SURYA, col. 5, l. 24, for drawn *r.* driven.

SUTTEE, l. 3 and 4 from bottom, *r.* thus—out number. As well as meritorious ſuffering for religion's ſake, ſuicide is in ſome caſes legal, and even commendable.

SUTTON, a village and pariſh of Surry, in the ſecond diviſion of Wallington hundred, which in 1811 contained 121 houſes, and 638 perſons; *viz.* 310 males, and 328 females.

SWADHA, l. 5, for Galaka *r.* Golaka.

SWIMMING *Bladders of Fiſh, Nature of the Air contained in.* We may introduce here the curious experiments made by Biot on this ſubject. This gentleman and Mr. Laroche found in general a mixture of azote and oxygen, but no hydrogen or carbonic acid in the ſwimming bladders of fiſh; the air-bladders of thoſe fiſh living near the ſurface of the water containing leaſt oxygen, and thoſe of fiſh brought from a great depth the moſt. The following table exhibits the proportion of oxygen in 100 parts of the air in the different fiſh examined.

Names of Fiſh.	Proportion of Oxygen.
Mugil cephalus (*Linn.*)	Quantity inſenſible.
Ditto	do.
Murænophis helena (*Lacepede*)	very little.
Sparus annularis (*Linn.*), female	.09
Ditto, male	.08
Sparus ſargus (*Linn.*), female	.09
Ditto, male	.20
Holocentrus marinus (*Lacepede*)	.12
Labrus turdus (*Linn.*)	.16
Sparus melanurus (*Linn.*)	.20
Labrus turdus (*Var. Linn.*)	.24
Sciæna nigra, female	.27
Ditto, male	.25
Labrus turdus (*Linn.*), female	.24
Ditto, male	.28
Sparus dentex (*Linn.*), female	.40
Sphyræna ſpet. (*Lacepede*)	.44
Sparus argenteus	.50
Sparus erythrinus	much.
Holocentrus gigas	.69
Gadus merlucius (*Linn.*)	.79
Trigla lyra (*Linn.*)	.87

The depth at which the fiſh in the preceding table are caught increaſes gradually, as well as the proportion of oxygen, from the beginning to the end of the table. The trigla lyra is always caught at a very great depth. M. Laroche found, that fiſhes taken at a depth greater than 150 feet, furniſhed at a mean about .70 oxygen, while the mean reſult furniſhed by the fiſh caught at leſs depths was only .29. The ſame law holds with reſpect to freſh-water fiſh. M. Biot's experiments were made near the Balearic iſlands.

SYCAMORE, in *Geography*, a townſhip of Hamilton county, in Ohio, containing 1552 inhabitants.

SYMPATHY. See *Mental* PHILOSOPHY.

T.

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TAIGAREE, for Tegerly *r.* Tegerhy.

TALBOT. Add—of whom 4878 were ſlaves in 1810.

TAMUL, the name of an Indian language, which is ſpoken in the tract extending to the ſouth of the Telinga, as far as Cape Comorin, and from the ſea to the great range of hills, including the greater part of the Barbamakal and Salem, and the country now called Coimbetore, and formerly Kangiam, along which line it is bounded to the W. by the Canara and Malabar. In the northern part of Myſore, this language is, at this day, named the Kangea; in the central portion of Myſore it is named the Drauvader, and further N. the Aravee.

TAMWORTH, l. *ult. r.* Strafford county.

TANACETUM, in *Gardening*, col. 2, l. 22, add—Dr. Withering ſays, that the Finlanders obtain a green dye from this plant.

TANK, a term uſed in India for a pool or reſervoir.

TAO-TSE, a term which denominates one of the two religious ſects in China; the other being diſtinguiſhed by the appellation of Fo. The ſect of Tao-tſe is ſaid to have been founded about 600 years before the Chriſtian era by Laokiun in the Tcheou dynaſty, and to have been more philoſophical than religious. In the Koong-foo, or poſtures of the Tao-tſe, and their ſuppoſed influences upon diſeaſes, may be traced a practice ſomewhat analogous to animal magnetiſm. See *Religion of* China.

TAPAS, col. 2, l. 11, for inflexions *r.* inflictions.

TAPIOCA. See Cassava and Jatropha.

Tapioca, *Chemical Properties of.* See Cassava.

TARTARIC Acid, *Chemical Compoſition of.* This acid has been lately analyſed by Gay Luſſac and Thenard, and alſo by Berzelius. The following are the reſults of theſe chemiſts.

	Gay Luſſac and Thenard.	Berzelius.
Hydrogen	6.629	3.951
Carbon	24.050	36.167
Oxygen	69.321	59.882
	100	100

TATE, in *Geography*, a townſhip of Clermont county, in Ohio, having 969 inhabitants.

TATNALL. Add—The number of inhabitants in 1810 was 2206, of whom 542 were ſlaves.

TAUNTON, l. 3, add—in Briſtol county, containing 3907 inhabitants.

TAYLOR, Henry, l. 23, for rector *r.* vicar; for Rotherhithe *r.* Reading; l. 24, for four *r.* eight; for two *r.* three. Col. 2. l. 9, for Diſcourſe *r.* Dialogue; l. 10, *r.* 1777.

TAZWELL, in *Geography*, a county of Virginia, containing 3907 inhabitants, of whom 328 were ſlaves in 1810.

TCHUKOTSKIJA. Add—See Chukotskija.

TEGERHY, *r.* Taigaree.

TELESCOPE, p. 5, col. 1, l. 9, for *Plate* XXIV. *r. Plate* XXVIII. P. 20, col. 2, l. 27, for I E M *r.* I F M. P. 27, col. 1, l. 6, 8, 15, and 23, for 1.3827 *r.* 1.3287; l. 23, for 12.61 *r.* 12.17774. P. 39, col. 1, l. 15 from bottom, for convex *r.* concave, and let the whole ſentence ſtand thus: *viz.* "To effect this improvement, the concave lens, with equal diſperſive power to that of rock-cryſtal, muſt be at one ſide of the concave of flint, and the convex of crown glaſs muſt be at the other ſide. P. 55, col. 1, l. 25, for $\frac{120 \times 46'}{68' - 48'}$ *r.* $\frac{120 \times 46'}{68' - 46'}$.

TELFAIR, in *Geography*, a county of Georgia, containing by the cenſus of 1810, 744 perſons, of whom 218 were ſlaves.

TELINGA, formerly called the Kalinga, and by the Europeans Gentoo, an Indian language occupying the ſpace to the E. of the Mahratta, from near Cicacole, its northern, to within a few miles of Pulicat, its ſouthern boundary, with the intervention of a ſtripe of ſmall dimenſion. This ſpace was divided into the Andra and Kalinga countries; the former S., the latter N. of the river. At the period of the Mahometan conqueſt, the ſouthern part of theſe united provinces ſeems to have been known to that people by the name of Telingana, and Waraukul is the capital of the whole.

TELLURIUM, in *Chemiſtry*. Add—This metal has the property of combining with hydrogen, forming a gaſeous compound, to which the name of *telluretted hydrogen gas* has been given. This compound was diſcovered by ſir H. Davy, and its properties were afterwards inveſtigated by Berzelius.

Telluretted hydrogen may be formed by mixing together oxyd of tellurium, potaſh, and charcoal, and expoſing the mixture to the action of a red heat. It is then put into a retort, diluted ſulphuric acid is poured on it, and the beak of the retort is plunged into a mercurial trough. A gas comes over, which may be collected in glaſs jars previouſly filled with mercury. This gas is tranſparent and colourleſs, and poſſeſſes the mechanical properties of common air. It has a ſtrong peculiar ſmell, ſomething like ſulphuretted hydrogen. It burns with a blueiſh flame, and oxyd of tellurium is depoſited. It is ſoluble in water, and gives that liquid a claret colour. Davy was not able to determine whether it reddens vegetable blues, but in other reſpects it possesses the properties of an acid, combining with alkalies, and precipitating most metallic solutions like sulphuretted hydrogen. Chlorine gas immediately decomposes it. The other properties of this gas have not been satisfactorily examined. From the experiments of Ritter, there appears to be a solid compound of tellurium and hydrogen.

Tellurium seems also to have the property of combining with carbon.

TEMPTATION, col. 2, l. 28, *r.* eminence.

TERRITORY, Missouri, col. 2, l. 5, add—It was first discovered by Sebastian Cabot in 1487, and in 1512 visited by John Pontio de Leon, a Spaniard, who endeavoured to form a settlement. In 1684 M. de la Sella, a Frenchman, discovered the mouth of the Mississippi, and built Fort Louis; but being assassinated, it was again abandoned. In the year 1698, captain Ibberville sailed to the Mississippi, formed a settlement, and named the country Louisiana. About twenty-two years afterwards, M. de la Suieur also sailed up the Mississippi, and proceeded to the distance of 2280 miles from its mouth. In 1762 France ceded it to Spain: in 1800–1801 Spain ceded it back to France; and by a treaty of April 30th, 1803, the French government sold it to the United States for the sum of fifteen millions of dollars, payable in fifteen years at the rate of one million annually. Bradbury's Travels, p. 214.

TEST-Act, col. 10, l. 4, for office *r.* offence.

TEUTATES. Add—See Druids.

TEUTHIS, Hepatus, l. *penult.* *r. Tang.*

TEWKESBURY, in *Geography*, a town of Hunterdon county, in New Jersey, containing 1308 persons, of whom 66 were slaves in 1810.

THEOPHILANTHROPISTS, a sect which sprung up, flourished, and became extinct in France during the period of the Revolution. It has been said, that the "temple of nature," opened in Margaret-Street, London, in 1776, by the lately deceased David Williams, an active member, if not the founder of the society for the relief of decayed and indigent authors, for worship on Deistical principles, suggested to the unbelievers of France the idea of a ritual and liturgy of deism, which was first carried into execution in the year 1796. The resemblance of the principles of some members of the sect to those of Robespierre, and of its ceremonies to the worship of the goddess of Reason, has led some persons to represent the Theophilanthropists as partisans of the tyrant, and their meetings as Jacobinical clubs; but the abbé Gregoire (*ubi infra*) has laboured to vindicate them as a body from this charge. The first person who planned the celebration of the rites of natural religion appears to have been D'Aubermenil, a romantic enthusiast, who wished to revive a part of the doctrines of the ancient Magi. In his work intitled "Culte des Adorateurs," which is a rubric, a liturgy, and a treatise of morals, eight days are appointed for labour, and the ninth for rest; but the temples were to be constantly open, and the sacred fire kept burning in them with the most religious care. The priests, whose costume was prescribed, were to offer to the Deity grain and fruits of different kinds, salt and oil, and, turning to the four cardinal points, to pour libations and make apostrophes to the elements. The twelve signs of the zodiac were to be painted on the walls of the temple, (or asylum, as it was denominated,) and under each thirty butterflies, to represent the number and shortness of our days. Sacred dances were to be performed at different periods; the elderly men leading off with the matrons, the young men and the virgins following. At funerals a libation was to be poured out to the manes of the deceased, and the eldest of his relations was to throw water on the fire, addressing the element in a prepared formula. D'Aubermenil proposed to denominate his followers "Théoantropophiles," which appellation was afterwards changed to "Théophilantropes." As the churches had all become national property, the Theophilanthropists applied to the civil authorities for the use of them jointly with the Catholics; and their request was granted, on condition that each party should remove the emblems and decorations of its own worship, while that of the other was performed. We shall not detain our readers with describing their ritual, the dress of their orators, or the circumstances attending their worship, and their marriage-service, nor shall we detail their moral lesson, or give specimens of their hymns and sacred poetry. This sect did not subsist for a long time; the zeal of its partisans began to decline in the provinces; and it appears, from the registers of a society at Bourges, that their first sitting was held in the cathedral, Feb. 29, 1798; and that on the 18th of August, 1800, their number being reduced to seven or eight, they dispersed, and the Theophilanthropic church of Bourges became extinct two years and a half after its first formation. In about five years, the whole sect had quietly disappeared; the last trace of it being that Chemin, who wrote a work defending their principles, made use of their manual as a school-book in a seminary at Paris, where he taught Latin. See Abbé Gregoire's Histoire des Sectes Religienses, &c. 2 vols. 8vo. Paris.

THOMPSON's Pond, and *Shaker Settlement*, in *Geography*, a township of America, in the district of Maine, and county of Cumberland, having 191 inhabitants.

THORINA, in *Chemistry*. The name of an earth recently discovered in Sweden by Berzelius.

This celebrated chemist first detected thorina in the *Gadolinite* of Koraryet, and afterwards in the *deutofluate of cerium*, and the *double fluate of cerium* and *yttria*, both minerals found at Fahlun.

Thorina may be obtained from the minerals containing protoxyd of cerium and yttria in the following manner. Precipitate the iron by means of the succinate of ammonia. Thorina when alone is precipitated by this salt, but this is not the case when it is mixed with the other bodies that exist in the fluates of cerium and yttria. After the iron is removed, precipitate the cerium by means of sulphate of potash. Ammonia now precipitates the thorina mixed with yttria. Dissolve them in muriatic acid. Evaporate the solution to dryness, and pour boiling water on the residue, which will dissolve the greatest part of the yttria, but not the whole. Redissolve the residue in muriatic or nitric acid, and evaporate till it becomes as exactly neutral as possible. Then pour water upon it, and boil it for an instant, the thorina precipitates, and the solution contains a disengaged acid. If we saturate this acid, and boil it a second time, an additional portion of thorina is precipitated.

Thorina when separated by the filtre has the appearance of a gelatinous semi-transparent mass. When washed and dried it becomes white, absorbs carbonic acid, and dissolves with effervescence in acids. Though calcined it retains its white colour. After a violent heat it is difficultly soluble in muriatic acid. The solutions in this acid are yellowish, but become colourless when diluted.

The neutral solutions of thorina have a purely astringent taste, which is neither bitter, sweet, saline, nor metallic; a property in which it agrees with zirconia, and differs from all other earths.

Thorina is little soluble in the alkalies or alkaline earths. It

It has not yet been reduced to the metallic ſtate. It is infuſible *per ſe* before the blow-pipe, but with borax it melts into a tranſparent glaſs. It differs from alumina by its inſolubility in hydrate of potaſh; from yttria by its purely aſtringent taſte without ſweetneſs; and by the property its ſolutions poſſeſs of being precipitated by boiling, when they do not contain too great an exceſs of acid. It differs from zirconia by the following properties: 1. After being heated to redneſs, it is ſtill capable of being diſſolved in acids. 2. Sulphate of potaſh does not precipitate it from its ſolutions, while it precipitates zirconia from a ſolution containing even a conſiderable exceſs of acid. 3. It is precipitated by oxalate of ammonia, which is not the caſe with zirconia. Sulphate of thorina cryſtallizes readily, while ſulphate of zirconia, ſuppoſing it free from alkali, forms when dried a gelatinous tranſparent maſs, without any tendency to cryſtallization.

Thorina combines with the different acids. The *ſulphate of thorina* is ſoluble, and yields tranſparent cryſtals, which are not altered by expoſure to the air, and which have a ſtyptic taſte.

The *nitrate* and *muriate of thorina* do not cryſtallize. The *carbonate of thorina* is very readily formed, the earth having a very great affinity for this acid. None of the other ſalts of thorina known appear to be capable of cryſtallizing.

THORN, in *Geography*, a townſhip of Fairfield, in Ohio, having 497 inhabitants.

THORNBURY, a townſhip of Cheſter county, in Pennſylvania, having 200 inhabitants.

THORNTON, a town of Grafton county, in New Hampſhire, containing 794 inhabitants.

THRIPS, col. 2, under VARIEGATA, l. 13, add—The Thrips phyſapus has been ſuppoſed to do much injury to wheat, rye, &c. by cauſing the young flowers to decay, and thus preventing the growth of the embryo grain. Some, however, have diſputed this opinion, contending that the thrips does not attach itſelf to ſuch of the cerealia as are in a perfectly healthy ſtate, but rather to ſuch as are diſeaſed, by having the germina covered with the duſt of a very minute fungus, often growing on wheat, &c. and belonging to the genus Æcidium or Lycoperdon, and which appears in the form of a flattiſh, ſmooth, irregular exſudation of a yellow colour in various parts of the plant. (See on this ſubject, vols. iii. iv. and v. of the Tranſactions of the Linnæan Society.) The ingenious Mr. Kirby, however, ſeems convinced, that the thrips is in reality an inſect highly injurious to corn, by deriving its nouriſhment from the embryo grain. Shaw's Zool. vol. vi.

TIC DOULEUREUX, in *Medicine*, an extremely painful diſeaſe of the nerves of the face, commonly, if not excluſively, affecting ſome branch of the fifth pair of nerves, and moſt frequently the infra-orbital branch, where it paſſes through the foramen, ſo named in the cheek.

The complaint commences with ſlight and almoſt imperceptible attacks of pain, and generally without any warning; though ſome patients feel in the affected part peculiar and inexplicable ſenſations preceding its approach, from which they announce with horror the coming enemy; the patient at the ſame time enjoying a good or an indifferent ſtate of health. The pain, however, ſoon becomes moſt acute, ſhooting and darting along the various ramifications of the affected nerves. It generally continues from a quarter to half a minute, and never exceeds the ſpace of one minute. It returns at intervals more or leſs frequent; there being ſometimes ſeveral paroxyſms in a few minutes, and at other times there are intervals of from fifteen to thirty minutes, or longer. There is no determinate period; we always find the utmoſt irregularity even in the ſame patient.

The pains vary in their degree of intenſity, at one time exciting the moſt piercing cries, and diſtracted writhings and motions in the miſerable patient; while at another, they are more bearable. When at the acme of their violence, the parts affected are often convulſed, and ſometimes various contortions and grimaces are obſervable. Theſe are to be diſtinguiſhed from the convulſive twitchings of the muſcles, with which the diſeaſed nerves communicate, and which are occaſioned by irritation from the exceſſive pain; while the contortions and grimaces are voluntary, being cauſed by the patient's writhing and twiſting from the agony of his torture, and may be prevented by a firm reſolution to reſiſt any impulſe of ſhrinking from the attack.

The pain does not always confine itſelf to the ſeat of the diſeaſe, but darts with the rapidity of lightning to the neighbouring parts, ſhooting in different directions like radii from a centre. It rarely gives warning of its approach, and often the firſt ſign of an attack, is the patient's ſtarting up in a ſtate little ſhort of phrenſy. In this condition, ſome patients beat the part with violence, or forcibly rub it with ſome rough ſubſtance till excoriation takes place; and in ſome inſtances, they have ſucceeded in diminiſhing the intenſity of the pain.

The pains are more frequent during the day than in the night, probably from there being fewer cauſes of irritation; and they are more frequent during converſation than in ſilence; and ſtill more ſo, at the time of maſtication, when the attacks often ſucceed each other with ſuch rapidity as to appear like one continued paroxyſm, with ſcarcely one interval of ceſſation. The eye at times is red, inflamed, and watery, as we ſometimes obſerve in ſevere tooth-ach. In other caſes, it is particularly dry, and in ſome patients a copious flow of ſaliva ſucceeds a paroxyſm. In general, only one ſide of the face is affected with this dreadful malady. But as there are caſes recorded in which both ſides ſuffered at the ſame time, we cannot lay it down as a certain characteriſtic of the diſeaſe. Fouquet obſerved at Montpellier two women who had both cheeks affected at the ſame time; and Pujol knew a lady, who, for ſeveral months, had the pain in one cheek, which after a while was free from pain; but the other cheek was immediately attacked in the correſponding place, the pain continuing for two months, and then reſuming its former poſition.

When the diſeaſe continues for a great length of time with increaſing violence, the patient can neither obtain reſt by night nor by day. His appetite fails; and, as may be expected, there is ſome degree of feveriſhneſs. But this rarely happens, and only in caſes of the utmoſt ſeverity. The complaint uſually terminates without any apparent cauſe, leaving the patient for a time to enjoy the comforts of life. But whoever has had one attack may with conſiderable certainty anticipate another; and though he is to-day well, and free from all pain, to-morrow's dawn may uſher in a renewal of his torment. So varied is the duration of this affection, and ſo limited is our knowledge of it, that we can aſſign no determinate or even probable period for its continuance; and unleſs a cure is effected it returns at intervals more or leſs frequent, and with increaſed violence, till the great final cataſtrophe, which, however, it does not ſeem to accelerate. For though Dr. Banſch is ſaid to have died of it, we can place little reliance on the report, and ſubſequent caſes and obſervations do not corroborate ſuch a ſuppoſition.

Hartenkeil,

Hartenkeil, Hildebrande, and Baldinger, and ſome other Germans, relate caſes of what they call tic douleureux; which, though in ſome particulars, they reſemble that affection, in others differ moſt materially. The firſt of theſe writers deſcribes it as having been very prevalent at Saltzburgh. But the pain was periodical, recurring generally once in twenty-four hours; and ſometimes, though rarely, once in twelve hours; often remaining for ſeveral hours at a time, and then ſuddenly departing. Theſe, however, were obviouſly caſes of hemicrania; for that has, in many inſtances, been obſerved to attack the patients periodically, and to yield to bark. See HEMICRANIA.

The *prediſpoſing cauſe* of this diſeaſe would ſeem to be a certain period of life, when the ſtrength begins to fail, the functions to be impaired, and the whole corporeal frame to feel the firſt ſigns of approaching decay. We rarely find it commence before the fiftieth year, though two or three caſes of an earlier date are recorded. Women do not ſeem to be more liable to the complaint than men; though Dr. Fothergill, having a great proportion of female patients, imagined they were more prediſpoſed to it; as likewiſe did Pujol, from their greater ſenſibility. The latter author (in his Eſſay, p. 14.) ſays, "we generally obſerve in ſuch people as are ſubject to tic douleureux an exceſs of mobility, which renders them more or leſs diſpoſed to hyſterical and hypochondriacal affections. Experience, however, teaches us, that people very far removed from exceſs of ſenſibility are equally liable to the diſeaſe; that women are not more liable to it than men; and that the prediſpoſing period of life is that when the ſenſibility or mobility of fibre is moſt defective.

The *exciting cauſes* are, cold applied to the face in a ſtream, whether of air or of water; particularly when the patient is fatigued by previous exhauſtion. Expoſure then to ſtormy, damp, moiſt, windy, and tempeſtuous weather, frequently excites an attack; alſo external injuries, as blows or contuſions on the face. Paſſions of the mind, as exceſs of anger or of grief.

The diſeaſe being once eſtabliſhed in the ſyſtem, the ſlighteſt cauſes in ſome individuals will bring on a paroxyſm; ſuch as eating, drinking, and talking, or indeed any motion of the facial muſcles, or the gentleſt touch with a handkerchief, or any other ſubſtance to the noſe, lips, cheek, &c. of the affected ſide. Shaving is an operation moſt particularly ſhunned and dreaded by the unhappy patient; and often cannot be endured till after a conſiderable interval of eaſe. Blowing the noſe is abſolutely impracticable; or, if attempted, a moſt pungent and diſtracting torture attends the performance. M. Andrée, in a work entitled "Obſervationes ſur les Maladies de l'Urétre," mentions a very obſtinate caſe of tic douleureux, which he attempted to cure by deſtroying the nerve that he ſuppoſed to be the ſeat of the diſeaſe. He began by laying it bare, and was aſtoniſhed to find, that every time he touched the denuded nerve, he immediately excited ſymptoms of the diſorder; the paroxyſm ceaſing in the uſual time, and recurring whenever the nerve was touched. This fact is very clear and deciſive as to the part affected by the diſeaſe, and hence we readily perceive, why the leaſt touch or motion on the ſurface of the ſkin produces a paroxyſm.

When the pain has continued with frequent acceſſions for a length of time, a moſt diſtreſſing ſcene is ſometimes witneſſed. The patient, whoſe health at the time is generally good, after deſiſting from eating and drinking, till the keenneſs of his appetite, and the intenſity of his thirſt, are too irreſiſtibly urgent to be longer unrelieved, attacks whatever food is placed before him with maniac fury and hurried precipitancy; his countenance ſuffuſed with crimſon, and convulſed and contorted with pain. This horrid conflict does not laſt long; he ſoon throws down his knife and fork with deſperate violence, obliged to ſolicit a ceſſation of pain by a ſtate of inaction.

Treatment of Tic Douleureux.—Of the inefficacy of moſt medicines in the cure of this cruel diſeaſe, we have abundant and melancholy proof. Thoſe which have been ſaid to procure eaſe are, opium, cicuta, zinc, ſtramonium, belladonna, argentum nitratum, and arſenic. But the inſtances in which a cure was effected by their uſe are very rare; indeed ſome practitioners, from painful experience, deny their efficacy altogether. All manner of topical applications, from bliſters to the ſmoking entrails torn from living pigeons, have been in vain applied, and baths and bleeding of all ſorts.

M. Watſon, profeſſor of chemiſtry in the central ſchool of Vaucluſe, relates two caſes of tic douleureux ariſing from venereal cauſes. The firſt was of an officer in the French army, aged thirty; the other that of a lady, aged forty. They were both completely cured by a courſe of mercury. Theſe caſes, in ſome reſpects, differed from the tic douleureux, but had its moſt diſtinguiſhing characteriſtic darting pains in the direction of the nerves. We learn nothing more from them, however, than that, where the ſymptoms of the tic douleureux are excited by the exiſtence of a venereal taint in the habit, they will depart when that taint is overcome by the action of mercury; but it is found from experience, that in ordinary caſes, the ſymptoms are not in the leaſt relieved by the uſe of mercury. Recourſe has next been had to electricity, to magnetiſm, to actual cautery, and finally, to the ſection of the affected nerves. Electricity ſometimes procures temporary eaſe, but as frequently increaſes the pain; though Mr. Blunt, in the Medical Journal, relates the caſe of a lady afflicted with tic douleureux being cured by electricity. The pain was chiefly ſeated in the right temple, and the ſymptoms are ſo well deſcribed as not to be diſputed. She was electrified twice in the day for ſeveral minutes each time; firſt with ſparks, then with ſhocks, after having previouſly endured a long and ineffectual courſe of powerful medicines. Immediately after the ſecond application of electricity ſhe ventured to eat, and performed that neceſſary operation without any inconvenience. The pains afterwards recurred very ſlightly; the electricity was continued; and in the courſe of a ſhort time, ſhe became entirely free from the complaint. The decided ſucceſs of this, though a ſolitary caſe, in ſuch a dreadful diſeaſe, authoriſes us to hope, that future trials may be made of the application of electricity, which under the direction of an able practitioner is often a very powerful inſtrument in the cure of diſeaſe, and much oftener fails from want of care and aſſiduity in the application, than from inefficiency in itſelf as an agent.

The mode of deſtroying the affected part of the nerves by cauſtic has been adopted by ſome practitioners, and ſaid to be attended with ſucceſs. But, till more experience has better eſtabliſhed the utility of ſuch a cruel operation, we cannot recommend its uſe; it has not been had recourſe to in this country: and ſome caſes are related in which it did not ſucceed, and others in which deformity of the face was the conſequence. M. Andrée, however, has tried it, and recommends its general uſe. In his work will be found an account of the method of operating.

The ſection of the affected nerve was thought of and tried many years ago in the cure of this diſeaſe; and of late years, from a temporary ſucceſs, ſome practitioners have confidently aſſerted, that the cure was effectual and radical; but more recent experience has deſtroyed the validity of ſuch aſſertions.

So long back as the year 1768, Veillard publiſhed a theſis, in which he decided this queſtion in the negative. "Utrum in pertinacibus capitis, facieique doloribus, aliquid prodeſſe poſſe ſectio ramorum nervi quinti paris?" Now it is not likely, that he ſhould have treated this important queſtion ſuperficially, but that he would rather collect all the information that at that time could be obtained upon the ſubject. He mentions two caſes where the diſeaſe returned after the diviſion of the nerves; and others, in which bad conſequences enſued after the operation. Mareſchal, about the middle of laſt century, operated twice without ſucceſs. Pujol was ſo convinced of its uncertainty, that he would not venture upon it. He has ſeen the muſcles paralyſed, and the face diſtorted in conſequence of the operation. Sabatier relates, that Ritah, ſurgeon to the king of Poland, performed the operation with ſucceſs; but the patient, after being free from the complaint for ſome time, was again attacked with his former pains.

Modern practice ſeems alſo to confirm our ſcepticiſm in the permanent ſucceſs of dividing the nerves. We ſee that what was at firſt ſuppoſed to be the moſt deciſive caſe in its favour, the operation performed, and the account of it ſo ably recorded by Dr. Haighton, is now not to be relied upon. Mr. A. P. Cooper has frequently performed the operation with ſimilar preſent ſucceſs, but with what permanency time only can determine.

There is a caſe related by Darwin, in the Zoonomia, of a gentleman who firſt had the ſecond branch of the fifth pair of nerves divided; then the firſt branch; and thirdly, the remaining third branch. But the patient was not yet relieved. He then had ſeveral inciſions made acroſs the ſide of the noſe, and oſſa naſi, through the maſſeter muſcle to the jaw-bone, through the parotid gland. And laſtly, ſome more twigs from the ſecond branch of the fifth pair, paſſing into the cheek, and lying between the pterygoideus internus muſcle, and the upper part of the lower jaw. Theſe operations were performed by Mr. Cruikſhank and Mr. Thomas. The patient, it ſeems, at length eſcaped alive and cured. De Haen has divided the ſuborbitar nerve, as have alſo Moreau and Guerin, without any bad conſequences. For the beſt method of operating, ſee Dr. Haighton's paper in the medical records.

It appears then, that as yet we know of no certain and radical cure for this painful affection. The ſection of the nerves promiſes the faireſt; but when it is had recourſe to, the patient ſhould be warned of the poſſibility of the complaint returning, and not amuſed with the certainty of its being completely cured. Admitting, however, that the diſeaſe may return in the courſe of a few years, the operation is ſo ſimple, is attended with ſo little inconvenience or danger, and the relief in general ſo complete and inſtantaneous, that there can be little heſitation on the part of the practitioner in recommending its being performed, when the ſeat of the diſeaſe is accurately aſcertained.

Lentin declares, he has had the misfortune to treat, in the courſe of twenty-ſeven years, fourteen patients attacked with this painful malady, without radically curing one; and calls upon all practitioners to make public any means they may have found to ſucceed, either in performing a complete cure, or even a partial relief of the ſymptoms. The only remedies from which he experienced any good effects, were the tincture of thornapple, Datura Stramonium Linnæi, and the ſulphureous baths of Meundorf.

A French writer relates a method of taking nutriment for thoſe patients who feel an appetite, but dare not indulge it, on account of the extreme pain; and that is, to ſuck through a ſmall tube, as a quill, reed, &c. ſoup, broth, milk, or any nouriſhing fluid, ſo gently as not to excite any pain.

TILE-ORE. See Copper, and Mineralogy, *Addenda*.

TIN, Crystallized, a kind of manufacture ſaid to have been accidentally diſcovered in France by M. Baget, called metallic watering, or *moiré metallique*. It depends upon the action of acids, either pure or mixed together, and in different degrees of dilution, on alloys of tin. The variety of deſigns reſembles mother-of-pearl, and reflects the light in the form of clouds. The proceſs is this:—Firſt, diſſolve four ounces of muriate of ſoda in eight ounces of water, and add two ounces of nitric acid.—Second mixture; eight ounces of water, two ounces of nitric acid, and three ounces of muriatic acid.—Third mixture; eight ounces of water, two ounces of muriatic acid, and one ounce of ſulphuric acid. One of theſe mixtures is to be poured warm upon a ſheet of tinned iron, placed upon a veſſel of ſtone-ware: it is to be poured on in ſeparate portions, until the ſheet is completely watered; it is then to be plunged into water, ſlightly acidulated, and waſhed. The watering obtained by the action of theſe different mixtures upon tinned iron, imitates very cloſely mother-of-pearl and its reflections; but the deſigns, although varied, are quite accidental. By heating the tinned iron to different degrees of heat, ſtars, fern-leaves, and other figures, are produced; and by pouring one of the above mixtures, cold, upon a plate of tinned iron, at a red heat, a beautiful granular appearance is obtained. Theſe metallic waterings will bear the blow of a mallet, but not of a hammer; hence the invention may be uſed for emboſſed patterns, but not for thoſe which are punched. Different colours and ſhades may be given by varniſhes, which, when properly poliſhed, will ſet off the beauty of the watering. When the tin is upon copper, the cryſtallization appears in the form of radiations or ſtars. M. Lewis Felix Vallet obtained a patent for an invention of this kind, upon delivering the following ſpecification, Feb. 5th, 1818. The proceſs of giving the new ornamental ſurface on metals or metallic compoſitions, conſiſts in employing thoſe acids and ſaline compounds and ſubſtances which chemically act upon tin, and which, when employed in the manner to be ſtated preſently, give to the metals or metallic compoſitions to which they are applied the appearance of a cryſtalline ſurface variouſly modified. To produce this effect, the metal or metallic compoſition ought to be previouſly tinned, or covered with a thin coat of tin. If the metal be pure tin, it requires no previous preparation. All greaſe remaining on the tinned ſurface in conſequence of tinning is to be taken off with a ſolution of potaſh, ſoap, or any other alkaline ſubſtances. The tin or tinned ſurfaces ſhould then be waſhed with pure water, dried and heated to a temperature which the hand can bear. When the ſurface has thus been cleaned and heated, any of the acids which act upon tin, or the vapours of thoſe acids will cauſe the deſired appearance of cryſtallization; but I give the preference to the following compoſition, which may conveniently be laid over with a bruſh or a ſponge. Take one part by meaſure of ſulphuric acid, dilute it with

five

five parts of water; take alfo one part of nitric acid, and dilute it with an equal bulk of water, and keep each of the mixtures feparate. Then take ten parts of the fulphuric acid diluted in the manner before ftated, and mix it with one part of the diluted nitric acid, and then apply this mixed acid to the tin, or to the tinned furface with a pencil or fponge, as above directed, and repeat the application of the faid compofition for feveral times fucceffively, or until the refult you expect proves fatisfactory. When this has been done, the cryftalline furface may be covered with a varnifh or japan more or lefs tranfparent or colourlefs, or coloured, and laftly polifhed in the ufual manner. Mr. Shaw, of Brunfwick-fquare, purchafed this patent, and tin-plates were made under its protection, at the manufactory of Mr. Burnell, at Batterfea. But the procefs being generally known among chemifts, the manufacture declined, and the patent, for which a confiderable fum was paid, became of little value.

Tin-*Plates*. Add—The manufactory for tinning ironplates was eftablifhed at Pontypool by major John Hanbury, where he refided until his death in 1734; and the invention of the art has by fome perfons been erroneoufly afcribed to him. His monument may be feen in Trevellin church.

TIOGA, in New York. Add—By the cenfus of 1810, the number of its inhabitants was 7899, including 61 flaves.

Tioga, a county of Pennfylvania, including two townfhips, and 1687 inhabitants.—Alfo, a townfhip of the faid county, having 803, the other Delmer, having 884 inhabitants.

TISBURY, including the Elizabeth iflands, in Duke's county, Maffachufetts, contains 1202 inhabitants.

TITANIUM, *Chemical Properties of*, are given under Titanium, in *Mineralogy*.

TITICACA. Add—See Chucuito.

TOBACCO, l. 3, for 1560 *r.* 1584. See Drake.

TOBAINA, a townfhip of Cumberland county, in Pennfylvania, having 1799 inhabitants.

TOBY. Add—Alfo, a townfhip of Armftrong county, in Pennfylvania, having 611 inhabitants.

TOLERATION, l. 18, add—The late abbé Gregoire, in his "Hiftoire des Sectes Religieufe, &c." obferves, that "we muft not confound civil and religious toleration. The latter fuppofes that truth and error are indifferent; which truth can never be, for it is only one; and this being the cafe religious toleration would be an affront to God, who is truth itfelf. Civil toleration is that which grants to every one the power of publicly exercifing the mode of worfhip to which he is attached;—an inalienable right of every member of fociety, and which, incorrectly denominated *toleration*, ought to be called *liberty of worfhip*. It has been already obferved, and cannot be too often repeated, that the only authority which the civil magiftrate poffeffes over religious affociations is to fee that they neither fuffer moleftation nor moleft one another." Col. 6, l. 13, add—and extended to Ireland by 57 Geo. III. c. 70.

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TOLLAND. Add—Alfo, a town of Maffachufetts, in the county of Hampton, having 798 inhabitants.

TOOLAVA, an Indian language, which extends from Nilifuram to Sedefhagar, S. of Goa.—Alfo, the name of a country confidered as a fubdivifion of Kérela, which extended from Gocuro, round Cape Comorin, to the river Tumbrapurai in Tinnavelly.

TOOMBUDRA, a river of Hindooftan, which is a fouthern branch of the *Kifhwa*; which fee.

TOPASSES, an Indian denomination of native black Chriftians, the remains of the ancient Portuguefe.

TOPHANIA, or Toffania, the name of a woman who refided firft at Palermo, and afterwards at Naples, and who rendered herfelf infamous by preparing and adminiftering poifon. She fold thofe drops, which from her acquired the name of *Aqua Tophania*, *Aqua della Toffana*. It was called alfo *Acquetta di Napoli*, or only *Acquetta*: but fhe diftributed her preparation, by way of charity, to fuch wives as wifhed to have other hufbands. From four to fix drops were fufficient to deftroy a man; and it has been afferted, that the dofe could be fo proportioned as to operate in a certain time. As fhe was watched by the government, fhe fled to an ecclefiaftical afylum; and when Keyfler was at Naples in 1730, fhe was then living; her life being fecure under that protection. It was her practice to diftribute her poifon in fmall glafs phials, upon which was this infcription, "Manna of St. Nicholas of Bari," and ornamented with the image of that faint, whofe reputation prevented its being particularly examined by the cuftom-houfe officers. About the year 1709, Tophania fled from one convent to another; but fhe was at length feized and thrown into prifon. Her imprifonment, as fhe was under ecclefiaftical protection, excited the indignation of the clergy, who endeavoured to raife an infurrection among the people; but they were appeafed upon Tophania's confeffion, that fhe had poifoned all the fprings in the city. Upon the rack fhe acknowledged her wickednefs; her protectors fled, and fhe was ftrangled; and in order to inftigate the archbifhop, her body was thrown, at night, into the area of the convent from which it was taken. Her fecret did not die with her; but her poifon was fecretly prepared and adminiftered at Naples after her death. It was afterwards prefumed, from the effects of her poifon, that it was a preparation of arfenic. Kayfler. Beckmann, Hift. Invent. vol. i.

TORPEDO, a kind of deftructive machine, invented by Mr. Fulton, to whom we owe the conftruction of the much more ufeful naval machine, *viz.* the fteam-boat. Add—This fubmarine mine, however it may give celebrity to the ingenuity of the inventor, will, we truft, for the fake of humanity and the honour of naval conflicts, never be adopted in any civilized nation.

TORRES VEDRAS. Add—This ancient town lies about feven leagues from Lifbon, and is fituated in a fmall plain, about three leagues from the fea, on the river Zigandra. It owes its name to the circumftance of there being the ruins of many old towers in its neighbourhood. The principal one, or caftle, has been repaired, and ferves as a point of defence to the works thrown up at this important pafs, which covers two great roads leading to Lifbon from this point, one by Mafra, the other by Euxarra dos Cavalleiros. Although this may be a fufficient defcription of it in a geographical point of view, we do not think it fhould be omitted to be here ftated, that the celebrated pofition occupied by the duke of Wellington to cover Lifbon in the fall of the year 1810, took its name from this town, which formed one of the principal points of the line of defence, which was carried acrofs from the Tagus to the fea, prefenting a *contour* of about forty miles, of fuch an impofing nature as to render unavailing all the efforts of an almoft overwhelming French army, under one of their moft diftinguifhed marfhals, to expel the Anglo-Portuguefe from the

the Peninfula. This line of defence (with another about five miles in its rear), ftretched from the Tagus at Alhandra to the fea where the Zigandra falls into it, being a direct line of about twenty-fix miles. The whole of this moft extenfive, varied, and gigantic pofition, was felected and formed under the duke of Wellington's direction, with the moft unwearied exertion by thofe able and fcientific engineers the late fir Richard Fletcher and colonel Chapman, and with the retreat of the French from before it, may be faid to have commenced the feries of achievements which finally ended in the triumphs of the Britifh army in the heart of France.

TORRINGTON, l. 1, after Connecticut, add—in the county of Litchfield, containing 1586 inhabitants.

TORSK. See GADUS *Brofme.*

TORTURE. At the clofe, add—Torture was abolifhed in Sweden by order of the king in 1786; in Poland, in 1776; in France by edict, Aug. 16, 1780; in Spain, Aug. 1814; and in Auftria, in 1776.

TOURACO. See CUCULUS and OPÆTHUS.

TOWIACHES, l. 1, infert—(fee PANIS); l. 5, after miles, add—N. lat. 35° 20'. W. long. 97°.

TOWNSEND, l. 1, add—in the county of Middlefex, containing 1246 inhabitants.

TOWNSHIP, *Upper*, *Middle*, and *Lower*, three townfhips of Capemay county, in New Jerfey; the firft having 1664, the fecond 1106, and the third 862 inhabitants.

TRACHYMENE, in *Botany*, from τραχυς, *rough*, and υμην, (as we prefume,) *a membrane*, alluding to the roughnefs of the covering of the feeds.—Rudge Tr. of Linn. Soc. v. 10. 300.—Clafs and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Eff. Ch. Umbel fimple. Involucrum of many leaves. Perianth a flight border. Petals acute, ftraight, undivided. Fruit nearly orbicular, compreffed, muricated.

1. T. *incifa*. Smooth Trachymene, or Botany-bay Carrot. Rudge as above, t. 21. f. 2.—Stem nearly naked, fmooth. Umbels terminal.—Sent, many years fince, under the above Englifh name, from Port Jackfon, by Dr. White. We have heard that the *root* is eatable, and like a carrot. The *herb* is fmooth, two or three feet high. *Stem* round, flender, alternately branched, each of the long, terminal, naked, fimple branches bearing a denfe, fimple *umbel*, fcarcely an inch broad, of numerous, white or reddifh, uniform, equal *flowers*. Leaves of the *involucrum* awlfhaped, fhorter than the umbel, combined at the bafe. *Fruit* fomewhat heart-fhaped, broader than long, muricated all over, when quite ripe, with crowded, blunt tubercles. One *feed* is often abortive. The *leaves* are chiefly radical, ftalked, fmooth, ternate, with wedge-fhaped, three-cleft, notched fegments.

2. T. *pilofa*. Hairy Trachymene.—Stem leafy, hairy, as well as the leaves and footftalks. Umbels lateral.—Gathered by Mr. Menzies, at King George's Sound, on the weft coaft of New Holland. Whole *herb* rough with fhort fhaggy hairs. *Umbels* on ftout ftalks, from the forks or fides of the *ftem*. Tubercles of the *fruit* acute, briftlepointed. See FISCHERA.

TRAETH COCH, for REDWHARF *r.* REDWAETH.

TRELLECH, or TRELLECK. Add—In 1811 the town contained 23 houfes, and 121 perfons; *viz.* 58 males, and 63 females. The parifh of this name, in the upper divifion of Ragland hundred, confifts of the parifh divifion, the town divifion, and the Grange divifion: the former contained 131 houfes, and 568 perfons; 275 being males, and 293 females: and the latter included 20 houfes, and 134 perfons; 74 being males, and 60 females.

TRENTON, l. 6, *r.* 3000.

TREVETHIN, a populous parifh of the county of Monmouth, in the upper divifion of Abergavenny hundred, which, including Pont-y-pool, contained, in 1811, 466 houfes, and 2423 perfons; *viz.* 1211 males, and 1212 females: 123 families being employed in agriculture, and 280 in trade, manufactures, or handicraft.

TRICHECUS—ROSMARUS, *r.* Jonftone.

TRIDACTYLUS, a fpecies of *Bradypus;* which fee. See alfo SLOATH.

TSCHUTSKI. See CHUKSTSKIJA.

TURCOMANIA. Add—See ARMENIANS.

TURNER, l. 2, add—and county of Oxford, having 1129 inhabitants.

TURNSTILE, in *Fortification*, a kind of barrier, which confifts of two or three pieces of timber, formed croffways, and making four or fix rays like the fpokes of a wheel; the frame is put on a poft in the middle of a paffage to turn horizontally, fo that two of its rays always ftretch acrofs the paffage, and prevent more than one perfon at a time from paffing the fame way.

TUSKARAWA, *r.* TUSCARAWA.

TWEDDELL, JOHN, in *Biography*, an accomplifhed fcholar, whofe early fate has been much lamented by all the lovers of literature and the arts, was the eldeft fon of Francis Tweddell, efq. of Threepwood, in the county of Northumberland, was born on the 1ft of June 1769; and after paffing through the ufual courfe of preparatory education, was entered at Trinity college, Cambridge, where he diftinguifhed himfelf by fuch proofs of original genius as are, perhaps, without example, even in the records of that learned fociety. As a candidate for univerfity honours, his "Prolufiones Academicæ" atteft his fuccefs to have been equally brilliant and extraordinary, and fuperfede the neceffity of particular illuftration. Mr. Tweddell was elected a fellow of Trinity college in 1792, and foon afterwards entered himfelf a ftudent of Lincoln's Inn, where he kept his terms, and continued to refide until the year 1795, when he left England to commence his travels on the continent of Europe—and met with that untimely fate which has mixed his afhes with thofe of the fages and philofophers of Greece. He vifited Switzerland, Germany, moft parts of the Ruffian empire, and particularly the Crimea, where his intercourfe with profeffor Pallas was of the moft intimate kind, and had fo endeared him to that amiable fcholar, that the admiration with which he fpoke of him partook of the tendernefs and affection of a father. From the borders of the Euxine, where his refearches were both diligent and productive, he proceeded to Conftantinople; and after fpending fome part of the fummer of 1798 under the hofpitable roof of Spencer Smith, efq. the Englifh minifter, he took his departure for the Grecian iflands; and having traverfed the provinces of Macedonia and Theffaly, arrived at Athens; where, after a refidence of feveral months, he reached the period of all his learned labours, on the 25th of July 1799.

Mr. Tweddell, independent of the advantages which his own merit fecured for him in the countries which he vifited, poffeffed recommendations and facilities of a fuperior kind for conducting his learned purfuits; and his induftry keeping pace with his talents and opportunities, his collections and manufcripts are known to have been extenfive and fingularly valuable. Perhaps no traveller of modern times has enjoyed in an equal degree the means of inveftigating the antiquities of Greece.

His remains were interred in the beautiful Doric temple of Thefeus at Athens; and his grave was fimply a fmall oblong

oblong heap of earth, like thofe over the common graves in all our Englifh church-yards, without a ftone or infcription of any kind; and his body was carelefsly depofited at about three or four feet beneath the furface. The part of the temple where it has been buried is now converted into a Greek church, dedicated to St. George; but as this building is occafionally open and liable to the intrufion of animals, who fometimes feek fuch retreats, Dr. Clarke and his companions, in their travels to Athens, obtained leave to take up the coffin, and to have it properly covered; and a Greek epitaph, compofed by Mr. Walpole in 1805, has been infcribed on a large block of Pentelician marble from the Parthenon, for recording the merits of the deceafed. The completion of this bufinefs has been owing to the exertions of lord Byron, and Dr. J. F. Lee, of St. John's college, Cambridge. Clarke's Travels, vol. vi.

TWIGGS, l. 2, add—of whom 642 were flaves in 1810.

TWIST, and Twisting. See Manufacture *of Cotton*.

V and U.

VAMANAVATARA, col. 3, l. 11, for admirer *r.* advifer.

VANDELLIUS, Vandel, in *Ichthyology*, a genus of fifhes of the order Thoracici, confidered by Dr. Vandelli of Coimbra as nearly allied to the genus Trichiurus; the characters of which are, body extremely long, fword-fhaped, gill-membrane five or fix-rayed, and teeth fubulate, thofe in front largeft. This fifh is the filvery vandel, with forked tail, which occurs, very rarely, in the Mediterranean and Atlantic feas, and fometimes near Lifbon.

VANDER WEYDE, Roger, called Roger of Bruges, in *Biography*, an hiftorical and portrait painter, was born at Bruges about the year 1455, and became the difciple of John Van Eyck, who, at a fhort period before his death, difcovered to him the fecret of painting in oil. From this time he diftinguifhed himfelf by many grand compofitions in a large fize, and was confidered as one of the firft Flemifh artifts who improved the national tafte, diverting it in fome degree of the Gothic, and manifefting grace in the airs of his heads, as well as correctnefs in his defign. He painted the portraits of feveral princes, and of many perfons of eminence, and obtained a confiderable degree of fame and fortune. His paintings in the town-hall of Bruges have been much commended; one of which is formed on the fubject of Trajan's juftice, executed on one of his foldiers, on the complaint of a mother, whofe fon had been murdered by him; and that of another is Archambrant, prince of Brabant, ftabbing his nephew, who was his next heir, when he himfelf was near dying, for having ravifhed a maid of that country.

VAN UTRECHT, Adrian, was a native of Antwerp, where he was born in 1599, and learnt the art of painting: at firft painting peacocks and other fowl for his amufement, in which he fo much excelled that he was encouraged to profecute this branch of his art. The fubjects to which his attention was principally directed were fruit, birds, flowers, dead game, and objects of ftill life; imitating and copying nature, and diftinguifhed by correct drawing, and the colouring of nature. He was deemed next to Sneyden in that ftyle of any of the artifts in the Low Countries; and though he was very induftrious, he could not execute one half of the orders which he received. His manner of pencilling was peculiarly delicate, and gives an uncommon tranfparence to his colours. Moft of his works were engroffed by the king of Spain, fo that they became fcarce, and they now produce very high prices. This artift died in 1651, at the age of 52 years.

VASSALBOROUGH. Add—containing 2063 inhabitants.

VATICAN. Add—The Vatican, defpoiled during the French revolution, can again boaft of poffeffing the Apollo, the Laocoon, the Antinous, and all thofe fine examples of the exquifite tafte and delicate fentiment of that refined people, the Greeks. The Transfiguration of Raffaelle, the St. Jerome of Domenichino, and the St. Petronilla by Guercino, fince their return from Paris, have been placed in a room by themfelves, but inconveniently dark.

VAUXHALL Bridge, a bridge over the Thames, extending from Millbank to Smith's tea-gardens, which nearly adjoin Vauxhall Gardens, and connecting the roads branching from that fpot to Hyde Park Corner by a ftraight road and ftreet acrofs Tothill-fields to Eaton-ftreet, Pimlico, and Grofvenor-place. This bridge, conftructed by Mr. J. Walker, confifts of nine arches of equal fpan in fquares of caft-iron, on piers of rufticated ftone, formed of fragments, united by means of Parker's cement. The total width is 809 feet, the fpan of the arches 78 feet, the height 29 feet, and the clear breadth of the road-way 36 feet. The eftimated coft of this bridge was above 300,000*l*.

VELOCIPEDE, Accelerator, or *Swift-Walker*, a machine originally invented by baron Charles de Drais, mafter of the woods and forefts of his royal highnefs the grand duke of Baden, who, in his account of its nature and properties, fays, that on a well-maintained poft-road, it will travel up hill as faft as an active man can walk; that on a plain, even after a heavy rain, it will move fix or feven miles an hour; that, when roads are dry and firm, it runs on a plain at the rate of eight or nine miles an hour, which is equal to a horfe's gallop; and that on a defcent, its motion is equal to that of a horfe at full fpeed. This machine, the theory of which is founded on the application of a wheel

wheel to the action of a man in walking, conſiſts of two wheels, one behind the other, connected by a perch, on which is placed a ſaddle for the ſeat of the traveller. The front wheel is made to turn on a pivot, and is guided in the ſame manner as a Bath-chair. On a cuſhion in front, the fore-arm is reſted, and by ſo doing the machine and the traveller are kept in equilibrio.

The management is as follows:—The traveller, having placed himſelf on the ſaddle, with his elbows extended, and his body a little inclined forward, muſt reſt his arms on the cuſhion, and preſerve his equilibrium by preſſing lightly on that ſide which appears to be riſing. The rudder (if it may be ſo called) muſt be held by both hands, which are not to reſt on the cuſhion, but to extend ſomewhat beyond it, that they may be at full liberty, as they are no leſs eſſential to the conduct of the machine than the arms are to the maintenance of the balance of it, for which purpoſe ſufficient dexterity will be ſoon acquired by attention and practice; then, placing lightly the feet on the ground, long but very ſlow ſteps are to be taken in a right line, at firſt care being taken not to turn the toes out, leſt the heels ſhould come in contact with the hind wheel. Dexterity in managing the equilibrium and direction of the machine ſhould be acquired before any attempt is made to accelerate the motion of the feet, or to keep them elevated while it is in rapid motion. This machine will run for a conſiderable diſtance while the rider is inactive, and with the ſame rapidity as when his feet are in motion; and in deſcent it will ſurpaſs the beſt horſes in a great diſtance, without being expoſed to the riſks incident to them, as it is guided by the mere gradual motion of the fingers, and may be inſtantly ſtopped by the feet. The ſaddle, as well as the cuſhion, may be raiſed or lowered at pleaſure, ſo as to ſuit the height of different perſons. The inventor propoſes to conſtruct theſe machines to carry two perſons, and to be impelled by each alternately, or by both at once; and with three or four wheels, with a ſeat for a lady; beſides the application of a paraſol or umbrella: and he alſo propoſes to avail himſelf of a ſail, with a favourable wind.

The velocipede has been introduced into this country under letters patent, by Mr. Johnſon, a coach-maker in Long Acre, by whom it has been much improved, both in lightneſs and ſtrength.

VENICE, col. 5, l. 10 from bottom. Add—At the laſt cenſus, taken about the year 1815, the population was ſtated to be about 100,000; and it is ſaid to be decreaſing.

VENTRILOQUOUS, l. 7, add—and LARYNX.

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VERMILION, col. 2, l. 20, add—The painter's vermilion is a factitious cinnabar, made by ſublimating a compound of ſulphur and mercury.

VERNON, in *Geography*, a town of Tolland county, in Connecticut, containing 827 inhabitants.

VESICULA FELLIS. See LIVER for GALL-*Bladder*.

VESTIS ANGELICA, for ANGELIC.

VIENNA, in *Geography*, a townſhip of Trumbull county, in Ohio, including 234 inhabitants.

VIOLIN. Add—The art of holding the bow, and of placing and moving it on the ſtrings, is the moſt difficult and important to incipient practitioners on the violin, which they have to encounter; as upon that depend the force, ſweetneſs, and penetrating power of the tone. They muſt pay great attention not to preſs too hard upon the ſtring, ſo as to make it curve and deviate from a right line; for then the tone would be harſh and coarſe. Neither muſt the bow be laid too lightly on the ſtrings, as the tone would then whiſtle and be too feeble. The juſt point of accuracy in this particular is, to place the hair on the ſtrings in ſuch a manner, that every part of it is in contact with whichever may be wanted. The bow muſt not act too near the bridge, nor too diſtant from it, as only dull and unpleaſing ſounds would be produced.

VIRAJ, l. 11, for her *r.* ten

VISHNU, col. 2, l. 4, for ſent *r.* ſcent.

VITELLUS. See YOLK.

UNDERSTANDING. See *Mental* PHILOSOPHY.

UNITED STATES, col. 6, l. 13 from bottom, add—See CANAL. Col. 7, l. 8 from bottom, add—The *manufactures* of the United States, previouſly to the peace of 1815 which reduced their number and value, were eſtimated at the following yearly amounts:

		Span. Dollars.
viz. Manufactures of	Wood - -	25,000,000
	Leather - - -	24,000,000
	Soap and tallow candles	10,000,000
	Spermaceti candles and oil	500,000
	Refined ſugar - -	1,600,000
	Cards - - -	300,000
	Hats - - -	13,000,000
	Spirituous and malt-liquors - - -	14,000,000
	Iron - - -	18,000,000
	Cotton, wool, and flax	45,000,000
	Total -	$151,400,000

Their preſent value has not been aſcertained, but it appears that the exports of their manufactures amounted in 1811 to a total of $1,553,000, including thoſe for domeſtic materials at $1,321,000, and thoſe from foreign materials at $232,000; and in 1816 to $1,755,000, including $1,415,000 of the former kind and $340,000 of the latter.

The manufactures from foreign materials were, ſpirits from molaſſes, refined ſugar, chocolate, gunpowder, braſs and copper, with medicines. The manufacture of wool is rapidly extending, as are alſo thoſe of iron and hemp, and eſpecially the latter, and alſo that of cotton. The manufacture of gunpowder nearly ſupplies the home market, which is alſo the caſe with regard to coarſe earthen-ware, window-glaſs, glaſs bottles, and decanters. About a million of buſhels of ſalt are manufactured annually; and ſalt-petre is largely manufactured in Virginia, Kentucky, Maſſachuſetts, Eaſt and Weſt Tenneſſee. Sugar from the maple-tree is produced in Ohio, Kentucky, Vermont, and Eaſt Tenneſſee, to the amount of nearly 10 millions of pounds annually. Weſt Tenneſſee and Vermont afford abundance of good copperas: 25 millions of gallons of ardent ſpirits are annually diſtilled and conſumed in the United States: 400 water and horſe mills, working 120,000 ſpindles, are employed in ſpinning cotton. The fulling-mills amount to 2000, and the number of looms exceeds 400,000; and the number of yards of cloth, manufactured from wool, cotton, and flax, is about 100 millions. They have 300 gunpowder-mills, 600 furnaces, forges, and bloomeries, and 200 paper-mills.

In the ſtate of Vermont, the chief manufactures are thoſe of iron, lead, pipe-clay, marble, diſtilleries, maple-ſugar, flour, and wool. In Maſſachuſetts, the principal manufactures are, duck, cotton, woollen, cut-nails (by a machine invented in Newbury port, which is capable of cutting two hundred thouſand in a day), paper, cotton and wool cards, playing-

playing-cards, ſhoes, ſilk and thread lace, wire, ſnuff, oil, chocolate and powder mills, iron-works, and ſlitting-mills, and mills for ſawing timber, grinding grain, and fulling cloth, diſtilleries, and glaſs. In Rhode iſland, are manufactured cotton, linen, and tow cloth, iron, rum, ſpirits, paper, wool and cotton cards, ſpermaceti, ſugar, machines for cutting ſcrews, and furnaces for caſting hollow ware. In Connecticut, are manufactured ſilk, wool, card-teeth (bent and cut by a machine to the number of 86,000 in an hour,) buttons, linen, cotton, glaſs, ſnuff, powder, iron, paper, oil, and very ſuperior fire-arms. In New York, are manufactured wheel-carriages of all kinds, the common manufactures, refined ſugar, potters'-ware, umbrellas, muſical inſtruments, glaſs, iron, and ſteam-boats. In New Jerſey, are numerous tanneries, leather manufactories, iron-works, powder-mills, cotton, paper, copper-mines, lead-mines, ſtone and ſlate quarries. In Pennſylvania, there are valuable collieries on the Lehigh river, diſtilleries, rope-walks, ſugar-houſes, hair-powder manufactories, iron founderies, ſhot manufactories, ſteam-engines, mill machinery, type-founderies, improvements in printing, and carpet manufactory. In Delaware, there are cotton and bolting cloth and powder manufactories, fulling, ſnuff, ſlitting, paper, grain and ſaw mills. In Maryland, are iron-works, collieries, griſt-mills, glaſs-works, ſtills, paper-mills, and cotton. In Virginia, are lead-mines, iron-mines, copper-mines, vaſt collieries, and marble quarries. In Kentucky, are manufactured cotton, wire, paper, and oil. In Ohio, ſhip-building is carried to a great extent. In North Carolina, the pitch-pine affords excellent pitch, tar, turpentine, and lumber; alſo iron-works, and a gold-mine, which has furniſhed the mint of the United States with a conſiderable quantity of virgin gold. In South Carolina, are gold, ſilver, lead, black-lead, copper and iron mines, and alſo pellucid ſtones of various hues, coarſe cornelian, variegated marble, nitrous ſtone and ſand, red and yellow ochres, potters'-clay, fullers'-earth, and a number of dye-ſtuffs, chalk, crude alum, ſulphur, nitre, and vitriol. In Georgia, the manufactures are indigo, ſilk, and ſago. In Louiſiana, are manufactured cotton, wool, cordage, ſhot, and hair-powder.

But the moſt extraordinary, and perhaps the moſt important manufacture in the United States, is that of ſteam-boats; the firſt application, if not invention, of which is aſcribed to Mr. Fulton. It was in the year 1807 that the firſt ſteam-boat plied between the cities of New York and Albany; but ſince that time this mode of navigation has been ſucceſsfully uſed in many other rivers of the United States beſides the Hudſon; ſo that ſteam-boats now aſcend the Miſſiſſippi and Ohio rivers, hitherto nearly unnavigable, except in the direction of their currents. The following table ſhews the cheapneſs, as well as expedition, of travelling ſince food as well as conveyance is included.

	Expence.	Hours.	Miles.
From Philadelphia to New York, by ſteam-boats and ſtages - -	\$10	13	96
New York to Albany, by ſteam-boats	7	24	160
Albany to Whitehall, by ſtages -	8	12	70
Whitehall to St. John's, by ſteam-boats	9	26	150
St. John's to Montreal - - -	3	4	37
Montreal to Quebec, by ſteam-boats	10	24	186
	47	103	699

In the ſpring of 1817, a ſteam-boat reached Louiſville, in Kentucky, from Pittſburg, in Pennſylvania, dropping down the Ohio. She diſplayed her power by different tacks in the ſtrongeſt current on the falls, and returned over the falls, ſtemming the current with eaſe. About the ſame time, a large ſteam-boat reached Louiſville from New Orleans, laden with ſugar, coffee, wines, queen's-ware, raiſins, fur, ſteel, lead, &c.; her freight equalling 25,000 dollars.

As for the *revenue* of the United States we can only collect a few particulars. We obſerve in general, that the national debt at preſent does not amount to 120 millions of dollars. Its ſinking fund conſiſts of an annual appropriation of \$8,000,000, ariſing from the intereſt of the debt redeemed, amounting in 1813 to \$1,932,107; for the ſales of public land, equal in that year to \$830,671; and from the duties on imports and tonnage. The revenue of the United States, previous to the late war againſt England, were derived from duties and taxes on imports, tonnage of ſhips and veſſels, ſpirits diſtilled within the United States, and ſtocks, poſtage of letters, taxes on patents, dividends on bank-ſtock, ſnuff manufactured in the United States, ſugar refined here, ſales at auction, licences to retail wines and diſtilled ſpirits, carriages for the conveyance of perſons, ſtamped paper, direct taxes, and ſales of public lands. The revenues have been chiefly derived from duties on imports and tonnages. Internal taxes have been laid at different periods by the Waſhington adminiſtration, but were all diſcontinued by an act paſſed April 1802, under the auſpices of Mr. Jefferſon. The following ſtatement exhibits the eſtimated receipts and expenditures of the United States at different periods.

Years.	Receipts.	Expenditures.
1791	\$4,418,913	\$1,718,129
1795	5,954,534	4,350,596
1800	10,777,709	7,411,369
1808	17,068,661	6,504,338
1809	17,773,473	7,414,672
1818	19,550,000	18,850,000
1819	22,950,000	22,880,000
1820	22,320,000	22,910,000

The net amount of revenue received in 1815 was \$50,906,106, being from cuſtoms \$37,656,486; internal duties, \$5,963,225; direct tax, \$5,723,152; public lands \$1,287,959; poſtage, &c. \$275,282. The report of the ſecretary of the treaſury for the year 1816 ſtates, that on the 12th of February 1816, the whole of the public debt, funded and floating, was \$123,630,692; but on the 1ſt of January 1817 did not exceed \$109,748,272, reducing the debt from Feb. 12th, 1816, to Jan. 1ſt, 1817, \$13,882,420. The ſecretary, in his Report of the 5th of December 1817, eſtimates the expenditure of the year 1818 at \$21,946,331, and leaves a balance in the treaſury of \$8,578,648 on Jan. 1ſt, 1819.

The American capital, conſiſting of perſonal property \$2,200,000,000, and of real property \$5,000,000,000, amounts to \$7,200,000,000; the income, \$300,000,000; expenditure, \$45,000,000; national debt, \$100,000,000.

The ſalaries of the principal officers of the federal government are as follow:

	Dollars.
Preſident, *per annum* - -	25,000 = 5625*l.*
Vice-preſident, ditto - - -	5000 = 1125*l.*
Secretary of ſtate, ditto - - -	5000
——— Treaſury, ditto - -	5000
——— War, ditto - -	4500
——— Navy, ditto - -	4500
Miniſters plenipotentiary, ditto -	9000 = 1822*l.* 10*s.*
Members of Congreſs, *per day* -	8

For

For further particulars we refer to general Hamilton's "Report on the Subject of Manufactures;" alſo his "Reports on Public Credit," and "On a National Bank;" Tench Coxe's "View of the United States;" Gallatin's "Sketches of the Finances of the United States;" "Treaſury Reports from 1790 to 1817;" Bludget's "Economica;" Pitkin's "Statiſtics of the United States;" and Briſted's "America and her Reſources," Lond. 1818.

Col. 12, Population in 1817, ſtated by Briſted in his "America and her Reſources."

States and Territories.	Population.
Maine	318,647
Maſſachuſetts	504,392
New Hampſhire	302,733
Vermont	296,450
Rhode iſland	88,321
Connecticut	349,568
New York	1,486,739
New Jerſey	345,822
Pennſylvania	986,494
Delaware	108,334
Maryland	502,710
Virginia	1,347,496
Ohio	394,752
Kentucky	683,752
Tenneſſee	489,624
North Carolina	701,224
South Carolina	564,785
Georgia	408,567
Louiſiana	108,923
Indiana	86,734
Diſtrict of Columbia	37,892
Miſſiſſippi Territory	104,550
Illinois Territory	39,000
Michigan Territory	9,743
North-weſt Territory	
Miſſouri Territory	68,794

Briſted obſerves, that the population of the whole United States has hitherto doubled itſelf in leſs than twenty-five years. The New England ſtates, he ſays, of courſe do not retain their proportion of this increaſe, becauſe large bodies of theſe people migrate annually to the weſtern country, which has therefore increaſed much faſter than the ſtates to the ſouthward. Kentucky, *e. gr.* has increaſed 80 *per cent.* in ten years; Tenneſſee, 95; Ohio, 180; Louiſiana, 150; Indiana, 800; Miſſiſſippi territory, 160; Illinois territory, 700; Miſſouri territory, 600; Michigan territory, 600; while of all the Atlantic ſtates, the greateſt increaſe is only 44 *per cent.*, the population growth of New York; and the leaſt is, that of Virginia, only 20 *per cent.*; ſo that in a few years the ſtates will range, if the future be like the paſt, as to their aggregate population in the following order, *viz.* New York, Pennſylvania, Virginia, Kentucky, Ohio, North Carolina, Maſſachuſetts, South Carolina, Tenneſſee, Maryland, Georgia, New Jerſey, Connecticut, Vermont, Louiſiana, New Hampſhire, Indiana, Miſſouri, Miſſiſſippi, Illinois, Delaware, and Rhode iſland.

VOLTAISM, l. 13.—The general concluſion deduced by Galvani from his experiments was, that the animal body poſſeſſes an inherent electricity of a ſpecific kind, which is connected with the nervous ſyſtem, and conveyed by means of the metals into the muſcles, ſo as to throw them into convulſions. From his diſcoveries he formed, with a precipitance that led him into error, a theory of muſcular motion, according to which the body contains an apparatus analogous to the Leyden phial, its different parts being in different ſtates of electricity, and the metals forming a connection between them, by which the electricity is equalized. Fowler, in his "Eſſay on Animal Electricity," publiſhed in 1793, concludes, that the galvanic influence is not referable to electricity, becauſe, for the production of the former, the preſence of two different metals appears to be neceſſary, while electricity, as proceeding from the electrical machine, is excited by the action of an electric upon a conductor. He alſo endeavours to ſhew, ſays Dr. Boſtock, the ingenious hiſtorian of galvaniſm, that electricity and galvaniſm are not, in all caſes, conducted by the ſame ſubſtances; and he alſo made ſome curious obſervations upon the effect of galvaniſm on animals not furniſhed with diſtinct limbs, ſuch as worms of various kinds. In the ſame year, 1793, profeſſor Volta's communications appeared in the Philoſophical Tranſactions of London, who adds to his luminous account of Galvani's diſcovery many curious experiments and obſervations of his own. He attempted, and with complete ſucceſs, ſays Dr. Boſtock, to overthrow Galvani's opinion, that the animal body bears an analogy to the Leyden phial, its different parts being in oppoſite ſtates of electricity. He ſuggeſted, that for the production of the effect it was eſſential to have two different metals; and hence he was led to conclude, that the muſcular contractions are produced by ſmall portions of electricity that are liberated by the action of the metals upon each other. This action of the metals upon each other is deſcribed as deſtroying their electrical equilibrium; and by eſtabliſhing a communication between them, their equilibrium is reſtored. This deſtruction of equilibrium he conſiders as a new law of electricity diſcovered by himſelf; and the animal is ſuppoſed to have no further concern in it, than as being a peculiarly ſenſible electrometer, and affording a very delicate teſt of the preſence of this diſengaged electricity in its paſſage from one metal to the other. He alſo eſtabliſhed another point, *viz.* that the nerve is the organ on which the galvanic influence immediately acts; but he found that if a part of a muſcle be laid upon two different metals, and theſe be made to communicate, a contraction is produced. He alſo confirmed the fact, previouſly noticed by Fowler, but by independent experiments, that ſnails and worms could not be made to contract; but that many of the inſects, as butterflies and beetles, were ſubject to the influence of the metals. For an account of Dr. Wells's experiments and obſervations, we refer to his paper in the Phil. Tranſ. for 1795. Profeſſor Volta, proſecuting his inquiry into the nature of galvaniſm, was led to introduce a new principle into his theory. Having before ſtated that two metals were eſſential to the extrication of the electric influence, he informs us, that their metallic nature may be diſpenſed with, provided that the ſubſtances differ in their power of conducting electricity. Accordingly he divides conductors into the two claſſes of dry and moiſt; the firſt including metals and charcoal; the latter, eſſentially conſiſting of water, holding various ſubſtances in ſolution. In order to form a galvanic circuit, it is neceſſary that a body from one of theſe claſſes be placed between two bodies from the other claſs: and thus the equilibrium is deſtroyed, which is again reſtored when the two are united by a conductor. (See GALVANISM.) For further particulars we are under a neceſſity of referring to Dr. Boſtock's very valuable "Account of the Hiſtory and preſent ſtate of galvaniſm," 8vo. London, 1819.

At the cloſe, add—It is natural to conclude, that galvanic electricity would be applicable to medical purpoſes. Accordingly we find, that about the year 1804, it was extenſively tenfively employed, more efpecially in thofe difeafes in which common electricity had been found ufeful. But the expectations that were formed concerning the efficacy of this powerful agent were generally difappointed. Flattering accounts, however, fays Dr. Boftock, (*ubi fupra*) of its fuccefs in different nervous diforders, in paralytic affections, in deafnefs, in fome kinds of blindnefs, in the recovery of perfons apparently drowned or fuffocated, and even in hydrophobia and infanity, were publifhed. But the credit of the propofed remedy was not permanent; and it therefore funk into difufe. Of late it has again been brought into notice by Dr. Philip of Worcefter, who has made trial of it, with beneficial effect, in fpafmodic afthma. Boftock's Hift.

UPPER, in *Geography*, a townfhip of Scioto county, in Ohio, having 496 inhabitants.

URFE', Honore' D', count of Chateaunef, and marquis of Vilromery, in *Biography*, was the fifth fon of James D'Urfé, a noble family of Forez, originating from Swabia, and born in 1567 at Marfeilles, in which city he was educated, and alfo in the Jefuits' college at Tournon. Although he was firft deftined to be a knight of Malta, he was diverted from this purpofe by his objection to celibacy; and he afterwards obtained a difpenfation to marry the wife of his brother Anne, who was feparated from her on account of impotence, and became an ecclefiaftic. His view in this marriage was to fecure the property of his wife, who was a rich heirefs, to his own family; but as he had no children by her he was difappointed in his mercenary purpofe, and the connection was unhappy. Thus fruftrated in his felfifh views, he retired to Piedmont, and devoted himfelf to letters. He was the author of feveral publications; but his name has been celebrated as a romance writer, on account of his "Aftrée," which was publifhed in five feparate volumes, at fucceffive periods, and continued as a performance of general perufal for fifty years. This romance exhibits a picture of human life in its various conditions, and difplays ample invention and acquaintance with men and characters under the difguife of paftoral fiction, from which, however, the author often deviates; he furnifhes a hiftory of his courtfhip of Diana de Chateau-Morant, his brother's wife, whom he married, and of the gallantries of the court of Henry IV. Although it was at a former period much read, it is too trifling for inftruction and too tedious for amufement. It was often republifhed, but the beft edition is faid to be that of Paris in 1753, in 10 vols. 12mo. by the abbé Souchai. D'Urfé died at Villafranche in 1625. His brother Anne was alfo a writer, and publifhed fome poems. Moreri. Gen. Biog.

VRIHASPATI, l. 8 from bottom, for Sultee *r.* Suttee.

W.

WALLINGFORD, in Vermont, &c.; l. 5, *r.* 1325.

WALPOLE, l. 2, *r.* 1894.

WALTON, in Derbyfhire. This townfhip is in the parifh of Chefterfield; and in 1811 it contained 133 houfes, and 720 perfons; *viz.* 375 males, and 345 females.

Walton-*le-Dale.* This townfhip, in 1811, contained 827 houfes, and 4776 perfons; *viz.* 2263 males, and 2513 females: 175 families being employed in agriculture, and 616 in trade, manufactures, or handicraft.

Walton-*on-the-Wolds.* In 1811, this parifh contained 47 houfes, and 222 perfons; *viz.* 111 males, and 111 females.

Walton-*upon-Thames.* In 1811, the town contained 104 houfes, and 606 perfons; *viz.* 315 males, and 291 females.

WANDSWORTH. In 1811, the parifh contained 905 houfes, and 5644 perfons; *viz.* 2728 males, and 2916 females.

WARLEY. In 1811, this townfhip contained 764 houfes, and 3958 perfons; *viz.* 1941 males, and 2017 females: 27 families being employed in agriculture, and 758 in trade, manufactures, and handicraft.

WARPING. See Weaving.

WARREN, in *Geography*, a county of Ohio, containing five townfhips, and 9925 inhabitants.

WARTERBURG, a town of Chittenden county, in Vermont, having 864 perfons.

WASHINGTON, l. 14 from bottom, add—including 315 flaves.

Washington, a townfhip of Pennfylvania, in the county of Fayette, having 2160 inhabitants.

WASH-WHEELS, in *Bleaching.* See Bleaching.

WATCH, in *Horology.* Col. 11, l. 4 from bottom, for 2 C R 1 *r.* 2, 6, 1, R; l. 11 from bottom, and col. 12, l. 9, *dele* while the quarters are ftruck, and fubftitute words to this effect—While the crémaillère is pufhed down for the purpofe of ftriking the hours. The fact feems to be, fays an ingenious correfpondent, that while the quarters are ftriking, the tail-piece 3, 4, is behind the teeth of the rack G; and the contrivance here defcribed is merely to take 3, 4, out of the way of thefe teeth, when, by pufhing in the pendant, they are carried back preparatory to ftriking the hour. Col. 25, l. 22 from bottom, for p. 66, &c. *r.* p. 166, &c. —*Warning-Watch by Berrollas*, col. 2, l. 7 from the bottom, for hours-wheel *u*, *r.* hours-wheel *n.*—*Mufical-Watch*, col. 1, l. 28, for balance-wheel I *r.* balance-wheel L.

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WATER, p. 21, col. 2, add—*Llanarthna fpring*, at a village in the vale of Towy, feven miles above Caermarthen; a ftrong chalybeate, in one gallon of which the gafeous contents

contents are, carbonic acid $16\frac{1}{2}$ cubic inches, atmofpheric air $4\frac{1}{2}$ ditto, and folid contents,

	Grs.
Carbonate of lime - -	$4\frac{1}{2}$
——— of iron - -	$5\frac{1}{4}$
Muriate of foda - -	6
——— of lime - -	$5\frac{3}{4}$
Sulphate of lime - -	2

WATER, in *Gardening*, col. 2, l. 40, *r.* Loudon. Col. 5, l. 23, ditto. Col. 7, l. 36, ditto. Col. 10, l. 30, ditto.

WATER-*Organ*. See HYDRAULICON.

WATER, *Vafes and Glaffes tuned by*. See ARMONICA, LASUS, and HYPPASUS.

WATER *Whimfey*. See WHIMSEY.

WATSON, THOMAS, in *Biography*, was born in 1590, and was editor of the fecond collection of Italian madrigals that appeared in England under the following title: "The Firft Part of Italian Madrigals Englifhed, not to the Senfe of the original *Dittie*, but after the Affection of the Noate." This collection, as we are told in the title-page, includes "Two excellent Madrigalls of Mafter William Byrd's, compofed after the Italian Vaine, at the Requeft of the faid Thomas Watfon." The poet is as much diftreffed for double rhymes to fuit the original ftanza and mufic of thefe madrigals, as his predeceffor, N. Yonge, in a former publication. That madrigal, indeed, which Byrd fet, firft in four parts, and then in fix, feems original Englifh, and is the beft of the collection.

This fweet and merry month of May,
While Nature wantons in her prime,
And birds do fing, and beafts do play,
For pleafure of the joyful time;

I chofe, the firft for holly daie,
And greet Eliza with a ryme:
O beauteous Queene of fecond Troy,
Take well in worth a fingle toy.

The editor feems to have been a man of fome learning, as well as knowledge in mufic, as he dedicates the work, in a Latin copy of verfes, to the earl of Effex, then at the fummit of favour with queen Elizabeth; and addreffes Luca Marenzio, from whom moft of the madrigals were taken, in another.

WEARE, l. 2, *r.* Hillfborough.

WEBB, fenior, in *Biography*, a favourite author of Englifh catches and glees, and one of the moft fuccefsful candidates for prizes at the catch-club during the moft brilliant period of its inftitution in 1762. See CATCH, and CATCH-CLUB.

WEBB, DANIEL, efq. author of an elegant and ingenious tract, intitled "Obfervations on the Correfpondence between Poetry and Mufic," 1769, 12mo. This author had acquired confiderable reputation by two former differtations in dialogue; the firft, "An Inquiry into the Beauties of Painting;" the fecond, "Remarks on the Beauties of Poetry;" which had rendered the public willing to receive favourably a third work from the fame pen. Much learning, extenfive reading, and a claffical tafte, were manifefted in this production, "On the Correfpondence between Poetry and Mufic." It is, however, more metaphyfical and lefs intelligible than his former tracts. The author feems to have conceptions difficult to bring forth, and out of the reach of common language to exprefs. He feems to concur with Rouffeau, that "mufic cannot narrate, nor precifely exprefs or paint any particular paffion;" but it can awaken fenfation and fentiments near the truth, and, with the affiftance of poetry, can be pointed to a determined affection or paffion. It can footh affliction, it can fupplicate, it can animate and roufe our courage, excite hilarity, and generate ideas of grace, innocence, and content, without the interpretation of poetry; but having nothing to imitate in nature, like poetry and painting, imagination muft affift in finding fimilitudes.

The fpeculations of Mr. Webb are not always free from obfcurity, though his language (when not deformed by his fondnefs for *hath*) is accurate and elegant. He fays, that "mufic cannot give pain, like poetry and painting;" but extreme harfh difcords allowed to be occafionally ufed in counterpoint, give pain to the ear, as intenfe as painting and poetry to the eye and the mind. The author's chief illuftrations are from Milton; and the work feems more intended to fhew the *beauties of Milton*, than the analogies between poetry and mufic. The expreffion of mufic arifes more immediately from rhythm than from the arrangement or combination of found, and many of its imitative beauties, perhaps all, are ideal. Mr. Webb's ideas in general are delicate, refined, and beautifully expreffed. But he never ventures to inftance a mufical compofition or fingle paffage which reminds us of practical mufic; and it does not clearly appear what kind of mufic he moft approves, or indeed what it is that he honours with the name of *mufic*.

Mr. Webb was one of the firft in our country who ventured to fay, that counterpoint and complication of parts in diffimilar motion was an enemy to melody and expreffion; he quotes Algarotti's "Saggio fopra l'Opera in Mufica," in confirmation of his opinions; but Rouffeau preceded both, in his "Lettre fur la Muf. Fran." publifhed in 1751, when he firft developed his idea of "Unité de Mélodie." Mr. Webb's obfervations, indeed, abound with deep reflections and *belle parole*; but we have not yet difcovered what benefit lyric poetry or vocal mufic can derive from fuch difcuffions.

WEIDEMAN, ——, came to England about 1726. He was long the principal folo player, and compofer, and mafter for the German flute. He was a good mufician, and played fo well on the organ, that we remember Handel, at a rehearfal of an oratorio in Covent Garden theatre, defiring him to touch a new organ juft finifhed by the elder Byfield, that he might judge of its effects in different parts of the theatre, in which he was obeyed by Weideman with confiderable abilities. But in his productions for the German flute, he never broke through the bounds of that mediocrity to which his inftrument feemed confined.

WEIGEL, ——, an excellent performer on the violoncello, whom we heard in 1772, at Vienna, in a grand concert given to all the firft people of that imperial city, and by the beft performers that could be felected. Gluck and his niece, a pupil of Millicco, and an enchanting finger, were there, and fhe fung, fometimes to her uncle's accompaniment on the harpfichord only, and fometimes with more inftruments, in fo exquifite a manner, that we could not conceive it poffible for any vocal performance to be more perfect.

Between the vocal parts of this delightful concert, fome admirable quartets, by Haydn, were executed in the utmoft perfection: the firft violin by Startzler, who played the *adagios* with uncommon feeling and expreffion; the fecond violin by Ordonitz, a good performer in the emperor's band; the tenor by count Brühl, one of the four fons of the great Saxon minifter, an admirable dilettante, and fine performer on feveral inftruments; and the violoncello by Weigel, the fubject of the prefent article. All the performers

formers in this concert, finding the company attentive, and in a difpofition to be pleafed, were animated to that true pitch of enthufiafm, with which, when muficians are themfelves inflamed, they have a power of communicating to others their own order, and of fetting all around in a blaze; fo that the contention between the performers and hearers on this occafion was only who fhould pleafe, and who applaud the moft.

WEISS, Sylvius Leopold, a famous performer on the lute, born in Silefia, travelled into Italy in 1708, in the fuite of prince Alexander Sobiefky, who dying at Rome, he was obliged to make his lute bear his expences back into Germany, going firft to Breflau and afterwards to Drefden, where he was engaged in the fervice of the king of Poland, and became the moft celebrated lutenift at that time in Europe. Germany has produced many eminent muficians of the name of Weifs; as John Adolphus Fauftinus, fon of Sylvius Leopold, a lutenift likewife; C. Weifs, a performer on the German flute, who vifited London in 1783, an ingenious and curious man, who had improved his inftrument, and had many curious peculiarities in his performance.

WELDON, John, an eminent mufician, was born at Chichefter, learned the rudiments of mufic of Mr. John Porter, organift of Eton college, and afterwards received inftructions from Henry Purcell. He was for fome time organift of New college, Oxon. But in 1701 he was appointed a gentleman extraordinary of the Chapel royal; and in 1708 fucceeded Dr. Blow as one of his majefty's organifts. In 1715, upon the eftablifhment of a fecond compofer's place in the king's chapel, Weldon was the firft who filled that ftation, of which he feemed confcientioufly determined to fulfil all the duties; for before he had long been in poffeffion of this office, he gave proofs of his abilities and diligence in the compofition of the communion fervice, as well as the feveral anthems required by the conditions of his appointment.

He was likewife organift of St. Bride's church in Fleet-ftreet, and of St. Martin's-in-the-Fields.

Befides many favourite fongs and folo anthems of the time, Weldon compofed two full anthems, which are inferted in Dr. Boyce's fecond volume; the firft is rather too familiar and common; but the fecond, "Hear my crying, O God," in fix parts, is a very pleafing and mafterly compofition; particularly the firft movement. In the fecond movement, the words *up upon* are unfortunately expreffed by notes that fucceed each other too rapidly for their eafy utterance. The paffages of the third and fourth movements feem much worn by forty or fifty years ufe; however, the paufes at the end of the laft ftrain have a fine effect.

Six of his folo anthems were publifhed about the year 1730; we fay *about* that period, as mufical chronology is become a very difficult ftudy. The late Mr. Walfh, finding that *old* mufic-books were like old almanacs, ceafed very early in this century to afcertain the time of their birth by dates, which have ever fince been as carefully concealed as the age of antiquated virgins.

Weldon's powers of invention and of harmonical combination feem very much limited. His anthems had the advantage of being fung in the Chapel royal by a celebrated finger, Mr. Richard Elford; but now, let who will execute them, they muft appear feeble and old-fafhioned, unlefs the embellifhments of George I.'s time are changed for thofe in prefent ufe. The truth is, that the fund of original conception or fcience, which alone can render old mufic valuable to the curious, long after the ftyle in which it was written is become antiquated and forgotten, was never very confiderable in Weldon's productions. His firft anthem, "O Lord rebuke me not," remained long in favour, when well fung in our cathedrals, from its refemblance to the ftyle of Purcell; and the natural and eafy flow minuet air to "Turn thee, O Lord, and deliver my Soul," which has fo much of a fecular fong and rondeau in it, that it is remembered with pleafure by the mufical part of a congregation, who are more likely to bear it in mind than more ferious parts of the fervice.

The productions of Weldon appear flimfy after thofe of Crofts; and Dr. Green's after Handel's: yet Green compared with Weldon is a giant; that is, a Handel.

There is a vice of which compofers of fmall refources are often inadvertently guilty, for want of a fincere and judicious friend to tell them of it; and that is, eternal repetition of the fame paffage, a note higher or a note lower, which the Italians call *rofalia*. This certainly originates in the want of ideas, and yet it may be avoided by attention, though the fheet would not fill fo faft. Weldon has indulged himfelf in thefe repetitions to a tirefome degree in feveral of his anthems; but in the ritornel to "Have Mercy upon me, O God," he has iterated the fame poor paffage a note lower feven times fucceffively!

His fong for two voices, "As I faw fair Clora walk alone," was in great favour fome years ago; and his air in the Judgment of Paris, "Let Ambition fire thy Mind," is a melody fo natural and pleafing, that, like an ever-green in vegetation, it will always be frefh and in feafon. And there is no air in greater favour than this at prefent, in the Englifh opera of "Love in a Village," to the words, "Hope the Nurfe of young Defire."

This compofer died in 1736, and was fucceeded in the King's chapel by the late Dr. Boyce.

WELLS, l. 1, *r*. L. and E.

Wells, in *Geography*, a townfhip of Rutland county, in Vermont, having 1040 inhabitants.

WELSH Music. If incredulity could be vanquifhed with refpect to the account which Giraldus Cambrenfis gives of the ftate of mufic in Wales during the 12th century, (fee Giraldus Cambrensis,) it would be by a Welfh MS. formerly in the poffeffion of Richard Morris, efq. of the Tower, which contains pieces for the harp that are in full *harmony* or *counterpoint:* they are written in a peculiar notation, and fuppofed to be as old as the year 1100; at leaft, fuch is the known antiquity of many of the fongs mentioned in the collection. But whether the tunes and their notation are coeval with the words, cannot eafily be proved; nor is the counterpoint, though far from correct or elegant, of fo rude a kind as to fortify fuch an opinion.

Some part of "this MS.," according to a memorandum which we found in it, "was tranfcribed in the time of Charles I., by Robert ap Huw, of Bodwigen, in the ifle of Anglefea, from William Penllyn's Book." The name of William Penllyn is recorded among the fuccefsful candidates on the harp, at the *eifteddfod*, or feffion of the bards and minftrels, appointed in the ninth year of queen Elizabeth, at Caerwys in North Wales, where he was elected one of the "chief bards and teachers of inftrumental fong." The title given to thefe pieces is "Mufica neu Beroriaeth;" and a note in Englifh informs us, that the manufcript contains "the mufic of the Britons, as fettled by a congrefs, or meeting of mafters of mufic, by order of Gryffydd ap Cynan, prince of Wales, about the year 1100, with fome of the moft ancient pieces of the Britons, fuppofed to have been handed down to us from the Britifh bards."

This mufic is written in a notation by letters of the alphabet, fomewhat refembling the tablature for the lute; but

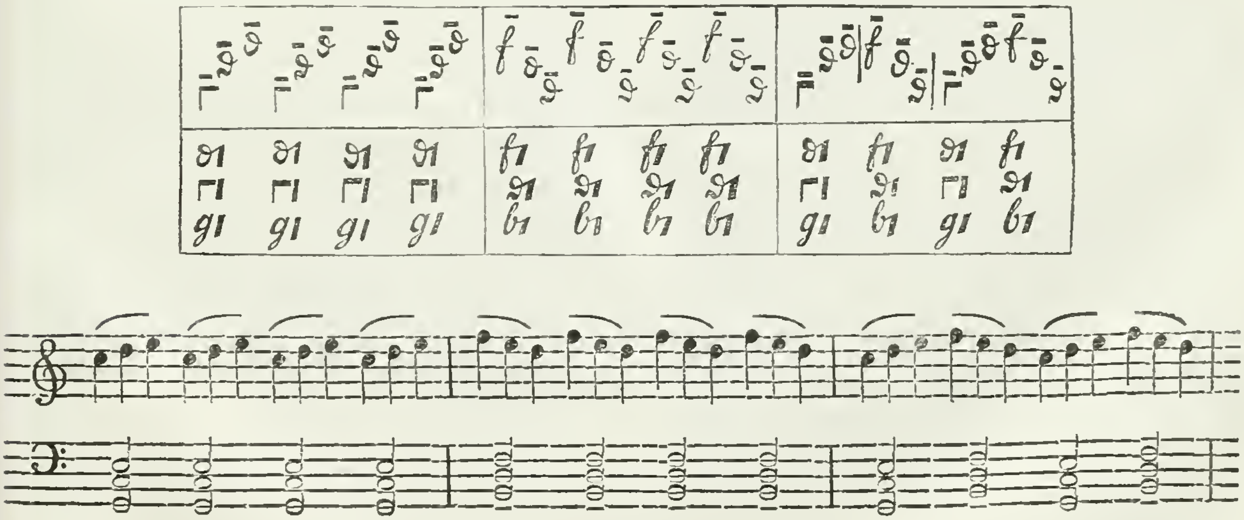
but without lines, except a fingle line to feparate the treble from the bafe.

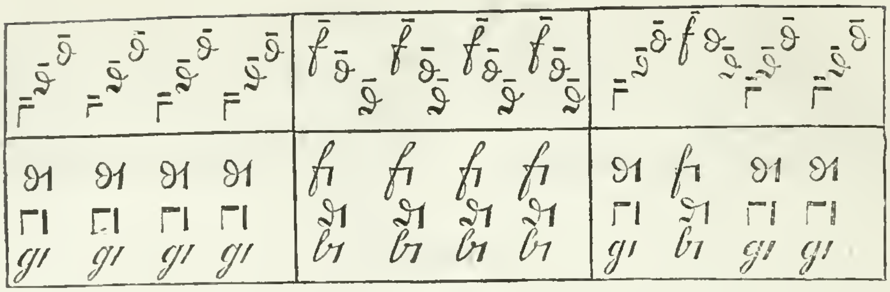
In the notation, double *ff* feems the loweft note; then the firft feven letters of the alphabet are written thus, *g* ι, *a* ι, *b* ι, c ι, d ι, e ι, *f* ι; and the next feptenary thus, with a dafh over each letter, $\bar{f}$, $\bar{g}$, $\bar{a}$, $\bar{b}$, $\bar{c}$, $\bar{d}$, $\bar{e}$. If thefe letters reprefent the fame founds as at prefent, we find fome fuch chords as are admitted in modern harmony; but others frequently occur that are mere jargon.

Many of the bafes, or accompaniments to the melodies, begin with the chord of C inverted, d ι / c ι / *g* ι. Thefe chords and melodies are leffons for young practitioners on the harp, and are faid to be the exercifes and trial-pieces which were required to be performed by the candidates for mufical degrees, and for the filver harp. Among the firft twenty-four leffons of this kind, fome few are eafy to decypher, as N° XI. and XVII., which we fhall give here as fpecimens of this notation, explained in modern mufical characters.

No. XI.

No. XVII.





After twenty-four leſſons, or meaſures, as they are called, of this kind, there follow twelve variations on a ground baſe.

This counterpoint, however artleſs it may ſeem, is too modern for ſuch remote antiquity as is given to it. The falſe 5th, from B to F, in the firſt example, has not been long allowed in harmony; and the unprepared 7th, from B to A, in the ſecond example, is a crudity that has been but very lately tolerated.

That the ancient inhabitants of Wales were great encouragers of poetry and muſic, cannot be diſputed, as many ſpecimens of Cambro-Britiſh verſification of undoubted antiquity ſtill ſubſiſt; and that theſe poems, as well as thoſe of ancient Greece and Rome, were originally *ſung* and accompanied with inſtruments, is very natural and reaſonable to believe; but that a rude and uncivilized people, driven into a mountainous and barren country, without commerce or communication with the reſt of Europe, ſhould *invent counterpoint*, and cultivate harmony, at a period when it was unknown to the moſt poliſhed and refined inhabitants of the earth, ſtill remains a problem of difficult ſolution.

Dr. Burney gives a farther account of this curious MS. in ſpeaking of *national muſic*, and the eſtabliſhment of muſical games or conteſts in Wales, before any other muſic ſeems to have been much cultivated in the reſt of the iſland, except the eccleſiaſtical or Gregorian chant, which the Britons, driven into the mountains of Wales by the Saxons, ſeem to have been very unwilling to receive from the Roman miſſionaries that were ſent over to convert their conquerors. The Britiſh annals and ſongs aſcribe with great reſentment the ſlaughter of the monks at Bangor, by Ethelbert, king of Kent, to the inſtigation of Auſtin the monk, on account of their having refuſed to ſubmit to the juriſdiction of pope Gregory, and the regulations he propoſed.

WELWIN, or Welwyn. In 1811, the parifh contained 192 houfes, and 1130 perfons; *viz.* 567 males, and 563 females.

WEMYSS. In 1811, the parifh contained 565 houfes, and 3691 perfons; *viz.* 1657 males, and 2034 females. This parifh includes Buckhaven, E. and W. Coallowns, Kirkland, Methil, E. and W. Wemyfs, and the reft of the parifh, containing 116 males, and 117 females.

WENDLING, J. Baptist, in *Biography*, an eminent performer on the German flute, in the fervice of the elector palatine at Manheim in 1772.

Francis and Charles, brothers, performers on the violin, and Mademoifelle Wendling, a finger, of the fame family, were all mufical profeffors of great merit in the fame fervice at the fame period.

WENLOCK, Little. In 1811, the parifh contained 178 houfes, and 941 inhabitants.

WENTWORTH. In 1811, this townfhip contained 226 houfes, and 1086 perfons; *viz.* 542 males, and 544 females.

WEREMOUTH, Monk's. In 1811, this parifh, confifting of five townfhips, *viz.* Felwell, Hylton, Monk-Weremouth, Monk-Weremouth Shore, and Southwick, contained 832 houfes, and 6504 perfons; *viz.* 2837 males, and 3667 females. The townfhip of Monk-Weremouth contained 210 houfes, and 1091 perfons; *viz.* 457 males, and 634 females: and that of Monk-Weremouth Shore contained 458 houfes, and 4264 perfons; *viz.* 1815 males, and 2449 females.

WESTBURY, in the county of Salop. In 1811, the townfhip contained 112 houfes, and 665 perfons; *viz.* 348 males, and 317 females: and the parifh, comprehending the chapelry of Minfterley, and the three townfhips of Weftbury, Weftley, and Yockleton, contained 417 houfes, and 2195 perfons; *viz.* 1124 males, and 1071 females.

WESTERLEY. Add—in Wafhington county, containing 1921 inhabitants.

WESTHAVEN, a town of Rutland county, in Vermont, having 679 inhabitants.

WESTMINSTER Abbey. Its happy conftruction for mufic at the commemoration of Handel in 1784, appeared to be fuch as not only to overfet all the predictions of ignorance and farcafm, but the conjectures of theory and experience. By fome it was predicted that an orcheftra fo numerous could never be *in tune;* but even tuning to fo noble an organ was for once grand, and productive of pleafing fenfations. By fome it was thought that, from their number and diftance, they would never play *in time;* which, however, they did moft accurately, and without the meafure being beaten in the ufual clumfy manner. By others it was prophefied that the band would be fo *loud*, that whoever heard this performance would never hear again; however the found of thefe multiplied tones arrived as mild and benign at the ears of the audience as they could from the feeble efforts of a few violins in a common concert-room. And, laftly, that from the immenfe fize of the building, no *fingle voice* had the leaft chance of being heard by thofe who had places remote from the orcheftra; but luckily this was fo far from being true, that not a vocal breathing, however feeble by nature, or foftened by art, was inaudible in any part of the wide-extended fpace, through which it diffufed itfelf in all directions.

There was, doubtlefs, great propriety in faluting their majefties at their entrance with the Coronation Anthem, yet we could not help wifhing that this performance, fo different from all others, had opened with fome piece in which every voice and every inftrument might have been heard at the fame inftant; as fuch an effect might then have been produced as can never be obtained by gradation. Indeed the moft fudden and *furprifing* effect of this ftupendous band was, perhaps, produced by fimultaneous tuning; as all the ftringed-inftruments performed this tafk *à double corde*, and thefe ftrings being all open, their force was more than equal to that of two ftopt-ftrings upon two different inftruments.

It is but juftice to Madame Mara, in fpeaking of the effects of a fingle voice in this immenfe building, to record that fhe had not only the power of conveying to the remoteft corner of this expanded ftructure, the fofteft and moft artificial inflexions of her fweet and brilliant voice, but of articulating every fyllable of the words with fuch neatnefs, precifion, and purity, that it was rendered as audible and intelligible as it could poffibly have been in a fmall theatre by mere declamation.

The happy conftruction of Weftminfter Abbey for cherifhing and preferving mufical tones, by a gentle augmentation without echo or repetition, was demonftrated by no part of the commemoration performance more clearly than in that of Mifs Abrams, whofe voice, though fweet, of perfect intonation, and good quality, was not regarded as theatrical, but fuch as the Italians denominate *bella voce de camera*, yet in the folo air, which fhe fung with her ufual tafte and expreffion, her voice was rendered more audible in every part of that immenfe building, than it had ever been in any concert-room in London.

Giardini, envious of the powerful tone of Fifcher's hautbois, which could even rival that of his own violin with all its force and fweetnefs, ufed to fay that Fifcher had an *impudence of tone*, but it never produced a more full, rich, and fweet effect than in the folo parts of Handel's fourth hautbois concerto, which he performed with fuch tafte and propriety, as muft have convinced all thofe who heard him that his excellence was not confined to his own very original and ingenious productions. Indeed, one of the Commemoration wonders feems to have been the perfect manner with which the fweet and grateful tone of his *fingle* inftrument filled the ftupendous temple of our holy religion, in the performance of this concerto.

WEST PENN, in *Geography*, a townfhip of Northampton county, in Pennfylvania, having 947 inhabitants.

WESTPHAL, in *Biography*, an eminent mufic merchant of Hamburg, one of the greateft publifhers in Germany during the middle of the laft century.

WHERWELL, in *Geography*. In 1811, Wherwell with Weftover parifh, in the hundred of Wherwell, contained 113 houfes, and 543 perfons; *viz.* 277 males, and 266 females.

WHIFF. Add—See Pleuronectes *Punctatus*.

WHITE, John, in *Biography*, a Quaker, at whofe fhop in Newgate-ftreet ladies were furnifhed with ftraw hats. This worthy man was a great collector of ancient rarities, as well as natural productions of the moft curious and extraordinary kind; no one of which, however, was more remarkable than the obliging manner with which he allowed them to be viewed by his friends and examined by ftrangers. Among his old books and MSS. he was in poffeffion of a very fcarce and valuable mufic-book, which once appertained to Dr. Robert Fayrfax, an eminent Englifh compofer during the reigns of Henry VII. and Henry VIII.; it was afterwards in the poffeffion of general Fayrfax, and upon his demife became a part of the Thorefby collection, at the fale of which it was purchafed by honeft John White.

WHITSTABLE, in *Geography*. In 1811, the parifh contained 235 houfes, and 1249 perfons; *viz.* 616 males, and 633 females.

WILLIAMSBOROUGH, a townfhip of Burlington county, in New Jerfey, having 619 inhabitants.

WILTSHIRE. In 1811, this county contained 37,478 houfes, and 193,828 perfons; *viz.* 91,560 males (including the local militia 1662), and 102,268 females: 22,657 families being employed in agriculture, and 14,857 in trade, manufactures, or handicraft.

WIMBLEDON. In 1811, the parifh contained 293 houfes, and 1914 perfons; *viz.* 891 males, and 1023 females.

WINDHAM, a town of Maine, in the county of Cumberland, containing 1613 inhabitants.

WINTERTON, in Lincolnfhire. In 1811, the parifh contained 179 houfes, and 821 perfons; *viz.* 379 males, and 442 females.

WINTERTON, in Norfolk. In 1811, the parifh contained 112 houfes, and 494 perfons; *viz.* 254 males, and 240 females.

WITCHCRAFT. Add—Dr. Henry More publifhed a curious tract, entitled "Antidotes againft Atheifm," in which he undertakes to prove the being of a God from the exiftence of witches, and the power which they poffefs. See his biographical article.

WITHERITE, col. 2, l. 9, add—The known repofitories of this fubftance are very limited; but it has been obferved by Mr. Aikin, in great abundance, in the lower part of a lead-mine in Shropfhire, where it occurs in irregular maffes, which weigh from forty to two or three hundred pounds, imbedded in heavy fpar. The miners call this fubftance "yellow fpar;" not that this is its real colour by day-light, but its tranfparency is fo confiderable, that if a lighted candle be placed behind a mafs of it, the whole will glow with a yellowifh light, by which circumftance the miners diftinguifh it from "heavy fpar." This latter from the loofenefs of its texture, being in large maffes quite opaque. The colour of the witherite is white, with the flighteft poffible, if any, tinge of yellow; its fracture is hard, ftriated, approaching to ftraight foliated; it is for the moft part maffive. Mr. Aikin obferved only one fpecimen that prefented any indications of a regular cryftalline form. In other particulars it agrees with the ufual defcription of this fubftance. 100 parts of this witherite yields,

Carbonate of barytes	- -	96.3
——— of ftrontites	- -	1.1
Sulphate of barytes	- -	0.9
Silex	- - - - -	0.5
Alumine and oxyd of iron	-	0.25
		99.05
	Lofs	0.95
		100

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WITTENA-GEMOTE, l. 14 from the bottom, *r.* concionatores.

WODANIUM, in *Chemiftry*, the name of a metal recently difcovered by Lampadius. This metal was obtained from a fpecies of pyrites, named by Breithaupt *Wodan-kies*, or wodan pyrites, formed at Topfchau, in Hungary, and which had hitherto been confidered as an ore of cobalt. The fpecific gravity of this mineral is 5.192. Its luftre is metallic. Its colour dark tin-white, paffing into grey or brown. Hitherto it has only occurred maffive, and in that ftate it is full of cavities. Its fracture is uneven. It is brittle and eafily frangible, and in hardnefs furpaffes fluor fpar, but is inferior to apatite. This mineral contains about 20 *per cent.* of the new metal united with fulphur, arfenic, iron, and nickel.

Wodanium has a bronze-yellow colour fimilar to that of cobalt glance, and its fpecific gravity is 11.470. It is malleable. Its fracture is hackly; it has the hardnefs of fluor fpar, and is ftrongly attracted by the magnet. It is not tarnifhed by expofure to the atmofphere at common temperatures, but when heated it is converted into a black oxyd.

The folution of this metal in acids is colourlefs; or at leaft has only a flight wine-yellow tinge. Its hydrated carbonate is likewife white. The hydrate of it precipitated by cauftic ammonia is indigo blue.

Neither the alkaline phofphates nor arfeniates occafion any precipitate when dropped into a faturated folution of this metal in an acid, neither is any precipitate produced by the infufion of nut-galls. A plate of zinc throws down a black metallic powder from the folution of this metal in muriatic acid. Pruffiate of potafh throws down a pearl-grey precipitate, &c.

Nitric acid diffolves with facility both the metal and its oxyd, and the folution yields colourlefs needle-form cryftals, which readily diffolve in water.

Such at prefent is all we know of this metal, and the ore containing it. The name *wodanium* has been given from the old Saxon divinity, *Wodan*.

WOODFORD, in *Geography*, a village in a parifh of the fame name, in the hundred of Becontree, and county of Effex. In 1811, the parifh was returned as containing 310 houfes, and 2056 inhabitants; *viz.* 1051 males, and 1005 females. It is fituated on Epping Foreft, in the vicinity of Walthamftow, Wanftead, Layton, &c. which contain a confiderable number of well-built houfes, admirably adapted for the country-refidence of the citizens of London.

WOODVILLE, in *Biography*. Add—Dr. Woodville, always anxious for the promotion of fcience, and no lefs difpofed to ferve the friends whom he efteemed, favoured the editor with feveral botanical articles for the Cyclopædia.

WOOLCOTT, in *Geography*, a townfhip of Orleans county, in Vermont, having 124 inhabitants.

WOOLLETT, WILLIAM, in *Biography*, a very eminent engraver, was born at Maidftone, in Kent, Aug. 27, 1735, and educated in his native town. In early life he exhibited fpecimens of his graphic talents, which being feen by Mr. Tinney, an engraver, occafioned his being taken by him as an apprentice. His advancement in his profeffion was very rapid, and fo diftinguifhed, that he contributed in a very high degree to the perfection of landfcape-engraving. He was alfo fingularly fuccefsful in the exercife of his art on hiftorical fubjects and portraits. So eftablifhed and fo permanent has been his fame, that the beft impreffions of his prints, particularly thofe of "Niobe" and "Phaeton," "Cebadon and Amelia," "Cnyx and Alcyone," "The Fifhery," "Vandyke's Portrait of Rubens," "The Death of General Wolfe," and "The Battle of the Boyne," whenever they occur in collections, are very highly appreciated.

The world was deprived of this eminent artift at the age of 50. His death, which occurred at his houfe in Upper Charlotte-ftreet, Rathbone-place, May 23, 1783, was announced to the public with the following tribute of refpect to his memory. "To fay he was the firft artift in his profeffion would be giving him his leaft praife, for he was a good a good man. Naturally modeſt and amiable in his diſpoſition, he never cenſured the works of others, or omitted pointing out their merits: his patience under the continual torments of a moſt dreadful diſorder upwards of nine months was truly exemplary; and he died, as he had lived, in peace with all the world, in which he never had an enemy. He has left his family inconſolable for his death, and the public to lament the loſs of a man whoſe works (of which his unaſſuming temper never boaſted) are an honour to his country." An elegant monument was erected to his memory in the cloiſters of Weſtminſter-abbey. Chalmers's Gen. Biog. Dict.

WOOLWICH, col. 3, l. 11.—The cadets, who are inſtructed at the royal military academy, were ſent for ſome years to the military college, then at Marlow, now at Sandhurſt, as a preparatory ſchool; but that plan, being found attended with diſadvantages, was abandoned. The inſtitutions at Woolwich and Sandhurſt are now therefore entirely independent; and we may add, that they are different in their nature, and are intended for very different purpoſes. The inſtitution at Woolwich is confined ſolely to the inſtruction of young gentlemen intended for the artillery and engineer ſervice; that at Sandhurſt is ſupplementary, and deſigned for the inſtruction of ſuch as are deſtined to any other branch of the military ſervice of Great Britain. The education at Woolwich is free of expence, except the little that is incurred by the purchaſe of the firſt uniform. The cadets at Sandhurſt pay a certain ſum annually, bearing an aſſigned proportion to the rank of their parents, and being only free, as we conceive, in caſes where the cadets are orphans, or their fathers ſubalterns.

WOORARA. See TICUNAS, and *Vegetable Poiſons*, under the article POISON.

WOULFE's APPARATUS. See DISTILLATION and LABORATORY.

WRESTLING. See PALE.

WROXETER, in *Geography*. In 1811, the pariſh contained 109 houſes, and 575 perſons; *viz.* 305 males, and 270 females.

WYMONDHAM, in Norfolk. In 1811 the pariſh contained 747 houſes, and 3923 perſons; *viz.* 1896 males, and 2027 females.

X.

VOL. XXXIX.

XANTHOSIA, in *Botany*, from ξανθος, *yellow*, that colour being ſtrongly communicated by the dried plant, to boiling water.—Rudge Tr. of Linn. Soc. v. 10. 301.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Eſſ. Ch. Petals five, ovate. Fruit ovate, ſtriated, ſeparable into two parts. Involucrum of two leaves, ſingle-flowered.

1. X. *piloſa*. Hairy Xanthoſia. Rudge as above, t. 22. f. 1.—Native of Port Jackſon, New South Wales. *Stem* ſhrubby, branched, hairy. *Leaves* alternate, ſtalked, oblong, obtuſe, ſinuated; hairy beneath. *Flowers* axillary, ſolitary, on ſhort ſtalks. *Bracteas* two, awl-ſhaped, briſtly, at the baſe of each flower-ſtalk. *Involucrum* of two obovate ribbed leaves, half way up the ſtalk. This plant certainly belongs to the order of *Umbellatæ*, however different in infloreſcence.

Y.

YELLOW FEVER, l. *penult.* *dele* for the details of which, ſee that article in the *Addenda*, and inſert—See QUARANTINE, *Addenda*.

YORK, col. 12, l. 1, for death *r.* reſignation.

YORK, *New*. See UNITED STATES.

YORK, *New*, city, col. 2, l. 24, add—as ſome ſay, 120,000.

Z.

ZINJAN, in *Geography*, a town of Perfia, in the province of Irak, diftant 21 miles, and bearing about N.W. by W. of Sultanee. This is a large and profperous town, capital of the extenfive diftrict of Khumfeh, under the government of one of the king's fons. From hence to the banks of the Kizilozian, or golden ftream, the diftance is 71 miles over an uneven country, full of deep ravines.

ZOLLIKOFER, George Joachim, in *Biography*, an eminent German divine and popular preacher, was born at St. Gall in Switzerland, Auguft the 5th, 1730. His father, who was a practitioner in the law, much efteemed for his integrity and piety, took great care of his education, and by his own counfel and example directed the courfe of his moral conduct; nor were any of his efforts for the proficiency of his fon in knowledge and virtue unavailing. As he was intended for the clerical profeffion, he was removed, at an early age, from the gymnafium of his native town, firft to Bremen, and afterwards to the univerfity of Utrecht, where the theological profeffors were held in high eftimation. Our young ftudent, however, foon difcovered that a college education was ill adapted to his afpiring mind; as, in his opinion, it was very unfavourable to all exertions of genius and originality of thought, by levelling the diftinctions of nature, by reftraining the intellectual capacities to a blind veneration for authorities, and prepofteroufly mifleading the judgment fo as to take the means of inftruction for its end. Poffeffing a native vigour of mind, which diftinguifhed him through the whole courfe of his life, he refolved, whilft he attended the public lectures with the reft of the fcholars, to cultivate his talents and to purfue his inquiries in his own way. Inftead of paying implicit deference to fyftems and fummaries of theology, drawn up in technical and fcholaftic phrafeology, he made fcripture and reafon his guide, and, as he fays in a letter to a friend, "I privately applied myfelf to the Bible, together with a clofe inveftigation of ecclefiaftical hiftory; for I found it impoffible for me to fubmit to the trammels of the fchools, where derivative doctrines are uniformly tranfmitted, without examination, by the fucceffive tutors from generation to generation, &c." In the other fciences, as well as in theology, he expreffes his diffatisfaction with the means of inftruction that were then adopted and invariably practifed in the public fchools. "The little which I know," as this modeft man was heard to fay, "I was obliged to teach myfelf, chiefly after I arrived at years of maturity; for indeed I had but a miferable education." This is not the language of pride and pedantry; as his attention was directed to a variety of refearches, which, in his youth, the ftate of education in Germany would furnifh him with no extraordinary advantages; and as he is known to have excelled in various departments of general literature and fcience, befides theology. His attainments in natural hiftory and natural philofophy were very confiderable; with the hiftories, ancient and modern, of the feveral nations of the world he had cultivated an extenfive acquaintance, and in the ancient and modern languages, particularly the Latin, French, and Englifh, he was no ordinary proficient; having made the works of the beft poets, orators, and philofophers, the fubjects of his particular ftudy. Of Cicero he is faid to have been a great admirer; and his eloquence was formed upon the model of that of this celebrated Roman orator. "Oh, my beloved Zollikofer!" fays Zimmermann (on Solitude), "what delightful experiences I am conftantly feeling of the truth of thofe leffons you delivered at Leipfic; thofe truly ufeful doctrines, which, difregarding a cold and barren theology, inculcate wife and virtuous precepts, that warm and amend the heart. On quitting your auditory, the man of bufinefs forgets his vexations, pours his anxieties into the bofom of friendfhip, furrenders his feelings to the charms of confolation, until his heart is dilated with new hopes and his inquietudes are fo far fufpended as to enable him to fuftain their return with fortitude, or to difpel them with courage. The ftudious man abandons his recondite and laborious refearches, efcapes from the labyrinth, and finds in the innocent and fimple fatisfactions of his family and dependants more real content and happinefs than even art and fcience could afford him." —"Men, in fhort, of every caft and character, here find by degrees the mind's bleft calm, and learn to put on the pure fpirit of the gofpel of Chrift."

Soon after he had finifhed his academical courfe, he fettled, as a preacher, at Murten in the Pays de Vaud; and in a little while removed to a more confiderable place at Monftein in the Grifons, and afterwards to Ifenburg. But neither of thefe places afforded fufficient range for his talents and zeal; and therefore in the year 1758, at the age of twenty-eight, he accepted an invitation to be one of the German preachers at the church of the evangelically reformed at Leipfic. In this connection he availed himfelf of the opportunity which his moderate labours afforded him, of giving that perfection to his difcourfes which was the object of his wifhes. Accordingly, the univerfal approbation which he received on the part of his numerous congregation from his firft fettlement conftantly augmented from

from day to day, and adhered to him to the very laſt hour of his addreſſing them. A conſiderable number of young members of the univerſity eagerly preſſed to hear his diſcourſes, learning from him, by example, how a ſubject ſhould be ſtudied and diſcuſſed, in order to contribute, in any remarkable degree, to the advancement of wiſdom and virtue among mankind by the oratory of the pulpit.

It is therefore natural to hope, that Zollikofer's genius will continue to operate not only throughout his native country, but likewiſe over many provinces of Germany, by means of theſe his diſciples, who are thus prepared for diſſeminating truth, and virtue, and happineſs among their fellow-creatures to the lateſt poſterity.

Several volumes of his excellent diſcourſes have for ſome years been in the hands of the public, and are in high and deſerved repute wherever the German language is underſtood, by all perſons to whom religion and virtue are objects of ſerious concern; to which the number of editions through which they have paſſed, and which are continually publiſhed, bear ample teſtimony, as well as to the taſte and judgment of the times with regard to compoſitions of this nature. A German writer ſays, that "Zollikofer was one of the firſt pulpit orators of his time. His ſermons were diſtinguiſhed by clearneſs of ideas and warmth of feeling. In regard to form, they were the moſt complete productions of the kind which had appeared, at that time, in Germany. The diction is copious and varied; the periods harmonious, and the whole acquires great animation from the connection of the ideas and the tranſitions." Of his theological creed we can form no decided opinion. His diſcourſes are practical, and not controverſial; and it muſt be allowed that whatever were his ſentiments on diſputed topics, they are adapted to inform the underſtanding, to impreſs the heart, and to regulate the temper and conduct. Some have ſuſpected that he belonged to the modern German ſchool of theologians. Profeſſor Eichorn pronounces his eulogy in the following ſtrain: "Zollikofer, on account of the philoſophical colouring combined with popularity, which he knew how to give to his diſcourſes, was an orator for the higheſt ranks. He unfolded the doctrines and principles of Chriſtianity with philoſophical accuracy; exhibited them in a conciſe and impreſſive manner, clothed in pure and ſimple language, without artificial ornament; and endeavoured to affect the heart by convincing the judgment."

Zollikofer, conſidering that pſalmody and prayer form an eſſential part of public worſhip, undertook to make a collection of ſpiritual ſongs for the uſe of his congregation, on a plan more ſuitable to the purpoſe, and more edifying than the old one. In doing this he availed himſelf of the advice and aſſiſtance of his judicious friends, both in regard to the improvement of the forms, and to the proper ſelection of hymns from the modern poets, particularly Gellert, Cramer, and Kloppſtock. This performance appeared in the year 1766. His diſcourſes and prayers for the uſe of public and family worſhip were publiſhed in 1777, and were followed in 1785 by his exerciſes of devotion and prayers for the private uſe of reflecting and ſincere Chriſtians. The Rev. W. Tooke, F.R.S. has done great ſervice to the cauſe of rational religion, by the tranſlation of 10 vols. 8vo. of Zollikofer's Sermons, and of his Devotional Exerciſes in 1 vol. 8vo.

Having ſaid ſo much concerning the profeſſional character and performances of Zollikofer, we cannot forbear adding a few particulars from the account that lies before us, with regard to his private and ſocial diſpoſition and conduct. "In humility and retirement, he purſued his path of life; never wiſhing to ſhine, his only aim was to be uſeful; becauſe in the exerciſe of that ſtern virtue which he taught he found his ſupreme delight. The poor and deſtitute, eſpecially thoſe of his congregation, beheld in him a father and a friend; though his bounty was by no means confined to them, it alſo extended to thoſe of other communions, relieving them either by his own donations or through application to others."—"His advice, his judgment, his interceſſion with others, his admonitions, his conſolation in misfortune, were at the ſervice of all who applied for them, and he even went before their requeſts. Young men deſirous of knowledge, eagerly ſought his acquaintance, and all thoſe who enjoyed that benefit have honeſtly confeſſed, that they derived from it material improvement both in heart and mind. Whatever he ſaid was true; every word he uttered might be relied on as conveying the real ſentiments of his heart; arrayed in the ſimple majeſty of truth, he ſought no other covering: and never did he commend or approve from complaiſance any thing that was contrary to the conviction of his own mind, or that he ſaw could not be approved upon the ſtricteſt rules of morality. His gravity was attractive and engaging, charity itſelf was in its ſmiles, his converſation entertaining, often animated, his equal cheerfulneſs amiable and inoffenſive, and his raillery, in which he very rarely indulged, the mildeſt poſſible. To a very conſiderable compaſs of literary attainments and great brilliancy of imagination, were added in the character of Zollikofer, the moſt undeviating rectitude, the moſt amiable diſpoſition, and the moſt prepoſſeſſing manners. The whole tenor of his life was one pure, uninterrupted, captivating harmony of virtue, and the ſweet enjoyment of the felicities ariſing from it. Among his other ſatisfactions he had that of being univerſally eſteemed, as of neceſſity it could not be otherwiſe. That happy mixture of ſerioufneſs and dignity with gentleneſs and affability; his own ſtrict courſe of virtue combined with ſo much indulgence and candour towards the failings of others; his heartfelt and firm conviction of the great truths he taught, which manifeſted itſelf in all his actions, in the whole tenor of his converſation as well as in his diſcourſes from the pulpit, without entertaining the ſlighteſt intolerance towards ſuch as differed from him in opinion, or arrogating the ſmalleſt ſuperiority over thoſe who poſſeſſed not the faculty of thinking for themſelves, or of fully comprehending every truth; his unwearied zeal to lead his auditors to the rigorous exerciſe of virtue, in his demands however never diſregarding the rights of humanity concerning what they could or could not do in theſe or the other circumſtances; his impartial eſtimation of mankind, juſtly diſcriminating the opinions and principles upon which they acted, carefully tracing out their good qualities, and heartily rejoicing in every advantageous diſcovery of that nature — let the reader contemplate all this as combined in the character of Zollikofer, and then pronounce, whether real undiſſembled veneration, the general eſteem of all ranks and claſſes of perſons muſt not as inſeparably have attended his wiſdom and virtue as the ſhadow follows the ſubſtance. Even the wanton wit of thoſe who, in the judgments they paſs on the miniſters of religion, are not aſhamed to ſet aſide the reſpect that is due from man to man, was awed into ſilence at the name of Zollikofer."

He was twice married, and in both connections he was truly happy, though both proved childleſs. For about a year before his death his faculties began to decline, and he wiſhed to reſign his office of preacher, and to retire to the place of his nativity in Switzerland; but at the requeſt of his congregation, who for the ſake of retaining him expreſſed their willingneſs to be ſatisfied with one diſcourſe in a fortnight, he was induced to remain in his ſtation. At length within a few weeks before his death he was obliged to devolve

devolve the charge of preaching on another perſon. His laſt illneſs was very painful; but he bore it with the patience of a philoſopher, and the reſignation of a Chriſtian, looking by a ſteady eye of faith and hope beyond the grave to a world of retribution. He obtained a releaſe on the 22d of January 1788, and was buried on the 25th. The whole of his numerous congregation, together with ſome hundreds of young ſtudents of the univerſity, and numbers of his auditors of the Lutheran communion, attended his remains to the grave, with every token of unfeigned ſorrow.

THE END.

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CATALOGUE AND ANALYSIS

OF THE

PLATES TO REES'S CYCLOPÆDIA;

COMPREHENDING

THE GENERAL TITLES, THE ORDER AND NUMBER OF THE PLATES AND FIGURES, AND THE PARTICULAR SUBJECTS,

TOGETHER WITH

OCCASIONAL EXPLANATIONS, AND CORRECTIONS OF ERRONEOUS REFERENCES.

PORTRAIT of Dr. REES — FRONTISPIECE to Vol. I. of the Cyclopædia.

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AGRICULTURE—ASTRONOMICAL INSTRUMENTS.

AGRICULTURE.

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5. Slark's
6. Machine for discharging Overplus Water of Ponds
7. Fixed Pig or Swine Case
8. Moveable Ditto
XL. Fig. 1. Piggery at Woburn, Ground Plan
2. End Elevation
3. Side Elevation
4. Feeder

ALGEBRA.

Palpable Arithmetic and Writing.
I. Fig. 1. Digits or Figures
2—8. Arithmetical Tables, &c. &c.
II. Fig. 7—9. Neper's Bones. *See* MISCELLANY, *Plate* I.

ANALYSIS.

Asymptote
(*The reference under this article to* ANALYSIS, *fig.* 1. *should be Plate* I. *fig.* 2.)
I. Fig. 1. Cissoid.
2—9. Conchoid
10—20. Construction
(*The figure numbered* 20 *is not the proper one. The figure referred to is inserted in* GEOMETRY, *Plate* IX. *fig.* 2. CONSTRUCTION.)
II. Fig. 21, 22. Cotesian Theorem
23. Crown
24. Curve, Caustic
25. Diacaustic
26. Characteristic, Triangle of a
Fig. 18. Element
3, 4. Cylinder. (*These figures are referred to as in* GEOMETRY, *Plate* IV.)
III. Fig. 1—13. Curvature
IV. Fig. 1—16. Curve
(*This Plate is numbered* VI. *and referred to as Plate* VI. *under the article* CURVE.)
V. Fig. 1—8. Cycloid
(*Fig.* 1—8. *have also been engraved by mistake on a separate Plate, under the head* CYCLOID.)
9—11. Epicycloid
VI. Fig. 1—10. Evolute
(*This Plate is numbered* V. *and referred to as Plate* VI. *The reference in the article* EVOLUTE, *to fig.* 35. *in this Plate, should be to fig.* 2.)
VII. Fig. 1—4. Fluxion
5. Analytic Function
(*This is a wrong figure inserted by mistake. The proper figure is in* GEOMETRY, *Plate* IX. *fig.* 3. HYPERBOLIC LOGARITHMS.)
6—8. Analytic Function

ANATOMY.

PLATE
VIII. Fig. 1—10. Analytic Geometry
(*This is numbered Plate* VII.)
IX. Fig. 1—4. No. 1. Gyration
4. No. 2—8. Harmonic Curve
IX. & X. (IX.) Fig. 1—17. Isoperimetry
(*These figures are referred to as* GEOMETRY, *Plate* IX.)
(X.) Fig. 1. Helicoid
2—7. Inflection
XI. Fig. 1. Lemniscate
2. Logarithmic, Atmospherical
3. Curve
4. Logistic Curve
5. Spiral
6. Magic Square of Squares
7. Circle of Circles
XII. Fig. 1—23. Locus
XIII. Fig. 1. Variation. *See* NAVIGATION, *Plates* I. & II. *fig.* 8. *Plate* II.
2. Ditto *fig.* 9. *Ditto.*)
XIII. Fig. 1, 2. Maxima and Minima
3. Parabolic Cuneus
4. Analytic Parallelogram
5. Progression
6. Quadratic Equation.
7—9. Quadratrix
(*For* Ratio, *referred to fig.* 9, *see fig.* 21.)
10—20. Quadrature
21. Ratio. (*Referred to as fig.* 9.)
(*For* Rectification, *referred to Plate* XIII. *fig.* 10—14, *see Plate* XIV. *fig.* 1—5.)
XIV. Fig. 1—5. Rectification
(*Referred to as Plate* XIII. *fig.* 10—14. *The reference under* SOLIDITY, *to fig.* 1—4, *of this Plate, should be to fig.* 7—10.)
6. Sections following
7—10. Solidity
(*Referred to as fig.* 1—4.)
11. Sub-tangent
12—15. Superficies
(*These figures are referred to as fig.* 6—9 *respectively.*)
16—22 Tangent
XV. Fig. 1—6. Tangent
(*See* GEOMETRY, *Plate* IX. *fig.* 14—19, *where these figures are inserted.*)
For Analytic Parallelogram, *referred to as on* ANALYSIS, *Plate* XVII. *see Plate* XIII. *fig.* 4.

ANATOMY.

I. Organs of Sense
EYE. Plate I. Fig. 1—5.
(*Plate* I.* *fig.* 1—5. *The same in Outline*)
II. EYE. Plate II. Fig. 1—11.
(*Plate* II.* *fig.* 1—11. *The same in Outline*)
III. EYE. Plate III. Fig. 1—15.
(*Plate* III.* *fig.* 1—15. *The same in Outline*)
IV. EYE. Plate IV. Fig. 1—5.
(*Plate* IV.* *fig.* 1—5. *The same in Outline*)
[IV.] EYE. Plate IV. Fig. 4.
(*This is fig.* 4. *of the preceding Plate, on a larger scale, and therefore not numbered as a separate Plate.*)

ARCHITECTURE.

PLATE
V. EAR. Plate I. Fig. 1—13.
(*Plate* I.* *fig.* 1—13. *The same in Outline*)
VI. EAR. Plate II. Fig. 1—13.
(*Plate* II.* *fig.* 1—13. *The same in Outline*)
VII. EAR. Plate III.
VIII—XVI. Myology.
XVII. Osteology, Skeleton
(*Numbered on the Plate* XVI.)
XVIII. Osteology, Skeleton
XIX. Cranium, Plate I.
XX. Plate II.
XXI. Viscera, Plate I. Fig. 1, 2.
XXII. (*Front*) Plate II. Fig. 1, 2.
XXIII. (*Back*) Plate III. Fig. 1, 2.
(*Numbered also* Viscera, Plate II.)
XXIV. Viscera, Plate IV. Fig. 1—4.

ANATOMY, COMPARATIVE.

I. & II. Fig. 1—3. Anatomy of Birds
III. Fig. 1, 2. Skeleton
(*Numbered Plate* IX.)
I—III. Anatomy of the Horse
IV. Stomach
Intestines

The other Plates referred to in the several articles on Comparative Anatomy, comprised in the former part of the Cyclopædia, including the articles FEATHERS, FISHES, HAIR, HORNS, INCUBATION, MAMMALIA, &c. are unavoidably omitted. Dr. Macartney, by whom these articles were furnished, has stated, that " he has found it impossible to procure, within any reasonable time, the drawings required for those Plates, in consequence of his removal from London, and of the indispensable occupations attending the laborious duties of his present professorship in the University of Dublin;" the editor has deemed it preferable, upon the whole, in this dilemma, to omit these Plates altogether, rather than to give them in an imperfect and unconnected manner; especially as he could not have given them, even in this defective state, without charging the work with a heavy additional expense, and further delaying its completion to a distant and indefinite period. He has had the less difficulty in coming to this determination, in consequence of no reference to Plates having been made in any of the articles on Comparative Anatomy, since Dr. Macartney's removal to Ireland deprived the editor of his assistance in this department.

ARCHITECTURE.

I. Fig. 1. Attic Base, Temple of Jupiter Olympius at Athens
2. Temple of Minerva Polias at Athens
3. Doric Base, according to Vignola
4. Ionic Base, Ditto
5. Doric Capital, from the Portico of Philip in the Island of Delos
6. Ditto, from the Temple at Corinth
7. Ionic Capital, from the Temple of Minerva
I. & III. Baths of Caracalla. (*See Plate* XXXVI. XXXVII.)
II. Titus. (*See Plate* XXV.)

PLATE
II. Roman Baſilica, from Vitruvius
Plan and Elevation
II.—V. Amphitheatre
(*Theſe Plates compriſe Eight Plans and Sections from the Amphitheatres of Verona and the Coliſeum, which are referred to in the article* AMPHITHEATRE *as* ARCHITECTURE, *Plates* II. *to* IX. *reſpectively.*)
III. Baſilica at Pæſtum
(*This edifice being of doubtful authority, the Plate has been omitted. It is repreſented in Wilkins's Antiquities of Magna Græcia, where it is called a "Pſeudo-dipteral Temple."*)
IV.—V. Baſilica of St. Peter's. See Plate XXXV.
VI. Arch Fig. 1—7.
VII. Dome Fig. 1—7.
(*This is marked* DOME, *Plate* I.)
VIII. Chimney and Dome.
Dome. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1—4.
(VIII. A) Fig. 1. No. 1—4. Fig. 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5. No. 1, 2.
(*Plate* XLI. CHIMNEY, *is joined with this.*)
IX. Fig. 1. Arch of Adrian at Athens
2. Septimius Severus at Rome
X. Fig. 1. Arch of Conſtantine
2. Titus
3. Section
XI. Baſilic
XII. Circus of Caracalla
(XI. *and* XII. *are on the ſame Plate.*)
XIII. Doric Order from the Parthenon
XIV. Tuſcan Order from the Church in Covent Garden
XV. Fig. 1. Doric Order, Temple at Delos
2. of Philip at Delos
3. of Ægeſta
4. of Jupiter at Selinus
5. at Selinus
XVI. according to Sir W. Chambers
XVII. Fig. 1. Pſeudo-dipteral Temple at Pæſtum
2. Temple of Theſeus at Athens
3. Temple of Concord at Agrigentum
4. Temple of Jupiter Panellenius in Ægina
5. Temple of Minerva at Athens
XVIII. Fig. 1. Theatre of Marcellus at Rome
2. Hexaſtyle Temple at Pæſtum
3. Temple of Jupiter Nemæus, between Argos and Corinth
4. Temple of Juno Lucina at Agrigentum
5. The Agora at Athens
XVIII a. Fig. 1—14. Doric Order
XIX. Temple of Pandroſus, at Athens
XX. Interior of a Hindoo Temple, at Deo, in Bahar
XXI. Mouldings, &c. Grecian and Roman

ARCHITECTURE.

PLATE
XXI. Mouldings, Fillet, Liſtel, Annulet, or Square
Aſtragal or Bead
Cyma, Cyma Recta, or Cymatium
Liſtel and Faſcia
Echinus Ovolo, or Quarter Round
Enriched
Sections of
Inverted Cyma, Talon, or Ogee
Talon enriched
Aſtragal, or Bead enriched
Doric Annulets
Cavetto or Hollow
Torus
Scotia or Trochilos
Cantaliver
Corinthian Modillion
Soffit of a Modillion
Pannel between the Corinthian Modillions in the ſoffit of the Corona
Flower in the Corinthian Abacus
XXII. Joinery. Fig. 1—7, No. 1. Fig. 7, No. 2—5. Fig. 8, No. 1—5.
XXIII. Doors. Fig. 1—11
XXIV. Doors. Fig. 1—5, No. 1, 2.
(*Marked* DOOR *Plate* A B.)
XXV. Painting from the Baths of Titus
(*Referred to as Plate* II.)
XXVI. Egyptian Capitals. Fig. 1—8
XXVII. Fig. 1—4. Corinthian and Compoſite Capitals
XXVIII. Ionic Order, from the Temple of Minerva Polias, at Priene
XXIX. Corinthian Order, from the Temple of Jupiter Stator, in Rome
XXX. Plan and Elevation of a Portico at Latopolis
XXXI. Eaſtern Portico of the Parthenon on the Acropolis of Athens
(*Marked* ARCHITECTURE, *Plate* A.)
XXXII. Bridges. Fig. 1, 2.
XXXIII. Bridges. Fig. 1—6.
XXXIV. Wooden Bridge, at Walton in Surry
XXXV. Baſilica. Incorporated Plans of the Baſilica of St. Peter's, and of the modern St. Peter's of the Vatican. The Plan, with the parts more deeply ſhaded, is that of the Old Baſilica. The parts which are more lightly ſhaded, indicate the larger modern edifice, the Church of St. Peter's
(*The two Plans here exhibited together in one view are referred to as* ARCHITECTURE, *Plates* IV. *&* V. *in the article*, BASILICA. *But, inſtead of giving the two Plans ſeparately, it was deemed preferable, upon the whole, to give Coſtaguti's own incorporated Plans of the two Edifices.*)
XXXVI. Baths of Caracalla. Plan
(*Referred to as Architecture, Plate* I.)
XXXVII. Ditto. Section
(*Referred to as Architecture, Plate* III. XXXVI. *and* XXXVII. *are on the ſame Plate.*)

PLATE
XXXVIII. Bridge. Fig. 1—6.
XXXIX. Bridge, Oblique Arch. Fig. 1—10.
XL. Weſt Door of the Cathedral of Carrara
(*The figures on the capital, on the right of the door, are repreſented on a larger ſcale in* BASSO RELIEVO, *Plate* IV. *fig.* 1.)
XLI. Chimney. Fig. 1—6.
(*This Plate forms a part of* ARCHITECTURE, *Plate* VIII. *There are ſome omiſſions in the ſmall letters of reference on fig.* 5. *which the reader will eaſily ſupply.*)
XLII. Carpentry, Roofs. Fig. 1—10.
XLIII. Roofs. Fig. 1—6.
XLIV. Roofs. Fig. 1—10.
XLV. Fig. 1. No. 1—4. Fig. 2, 3.
XLVI. Fig. 1. No. 1, 2. Fig. 2. No. 1—6.
XLVII. Fig. 1—3.
XLVIII. to LVII. (*There are no Plates of theſe Numbers. Plate* XLVIII. *was, by miſtake, numbered* LVIII. *and the following numbers were continued accordingly.*)
LVIII. Roofs. Fig. 1, 2. Fig. 3. No. 1, 2. Fig. 4, 5. No. 1—4.
LIX. Roofs. Fig. 1. No. 1—3. Fig. 2. Fig. 3. No. 1, 2.
LX. Carpentry. Fig. 1—8. Fig. 9. No. 1—6.
LXI. Carpentry. Fig. 1. No. 1, 2. Fig. 2, 3. Fig. 4. No. 1, 2. Fig. 5. No. 1, 2. Fig. 6. No. 1, 2. Fig. 7, Fig 8. No. 1, 2. Fig. 9. No. 1—3. Fig. 10. No. 1, 2.
LXII. Carpentry. Fig. 1. Fig. 2. No. 1—3. Fig. 3—6. Fig. 7. No. 1, 2. Fig. 8. No. 1, 2.
LXIII. Carpentry. Fig. 1—3. Fig. 4. No. 1—4. Fig. 5—8. Fig. 9. No. 1, 2. Fig. 10. No. 1, 2. Fig. 11.
LXIV. Carpentry. Fig. 1. Fig 2. No. 1—7. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2.
LXV. Bridges. Fig. 1—4.
LXVI. Centres. Fig. 1—3.
LXVII. Fig. 1—3.
LXVIII. Fig. 1—3.
LXIX. Geometrical Principles of Carpentry. Fig. 1—3. Fig. 4. No. 1, 2. Fig. 5, 6.
LXX. Ditto. Fig. 1, 2. Fig. 3. No. 1—3. Fig. 4. No. 1, 2. Fig. 5.
LXXI. Ditto. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—8.
LXXII. Ditto. Fig. 1—7. Fig. 8. No. 1, 2. Fig. 9. No. 1, 2.
LXXIII. Ditto. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3, 4.
LXXIV. Ditto. Fig. 1. No. 1—6. Fig. 2. No. 1, 2. Fig. 3.
LXXIV.* Groin. Fig. 1—5.
LXXV. Geometrical Principles of Carpentry
LXXVI. Ditto. Fig. 1. No. 1—7.
LXXVII. Ditto. Fig. 1—6.
LXXVIII. Ditto. Fig. 1. No. 1—6. Fig. 2. No. 1—6.

PLATE

ARMOUR.

I. Ancient Bronzes
A. In the Collection of P. Knight, Eſq.
B, C. In the Britiſh Muſeum
D. In the Collection of P. Knight, Eſq.
II. Armour. Fig. 1, 2. From Denon
3, 4. the Tuſcan Gallery
5. a Gem
6. From Sir W. Hamilton's Vaſes
7. the Tuſcan Gallery
8. a Bronze in the Britiſh Muſeum
9a. From the Tuſcan Gallery
III. 9, 10. From Sir W. Hamilton's Vaſes
11. From the Britiſh Muſeum
12. Bartoli's Triumphal Arches
13, 14. From the Britiſh Muſeum
15. From Bartoli's Triumphal Arches
16—19. From the Britiſh Muſeum
20. From Bartoli's Triumphal Arches
IV. Ancient Armour
Fig. 1, 2. Saxon
3, 4. Daniſh
5. Norman
6. Plate Armour from the Monument of Thomas Beauchamp, Earl of Warwick
V. Fig. 1. Henry VIII.'s Armour
2. Croupiere or Buttock Armour
3. Robert Dudley, Earl of Leiceſter, in Tilting Armour
4. Half-tilting Habit of Prince Henry
(IV. *and* V. *are on the ſame Plate.*)

ARTILLERY.

I. and II. Fig. 1. Aries, or Battering Ram
2—4. Catapulta, uſed by Lord Heathfield at the Siege of Gibraltar
I. Fig. 1—13. Carriages
II. Fig. 14—20. Carriages
III. Fig. 21—33. Carriages
IV. Fig. 34—44. Carriages
V. Fig. 45—61. Carriages
Artillery Encampment
(*The Plate which has this title, is* CAMP, *Plate* III.)

ASTRONOMY.

I. Fig. 1, 2. Aberration
3, 4. Culmination
5, 6. Altitude
7. Refraction of Altitude
8. Parallax of Altitude
9*, 10*. Anomaly
11*. Arc
12. Area
13. Argument

PLATE
II. Fig. 9. General View of the Solar Syſtem
10. Proportional Magnitudes of the Primary Planets
11. Proportional Magnitudes of the Sun, as ſeen from the Primary Planets
III. 14. Armillary Sphere
15—17. Aſcenſion
18, 19. Axis
20, 21. Azimuth
22. Chronology
(This Plate is numbered Plate II.)
IV. Fig. 23—36. Comet
V. Fig. 37. Commutation
38—42. Crepuſculum
43. Culmination
43. Day
44, 45. Declination
46. Demi Croſs
VI. Fig. 47—52. Degree
53. Degree meaſured in 1736.
54. Meaſured in 1803
VII. Fig. 55—67. Degree
VIII. Degree
IX. Fig. 60. Denſity
61, 62. Depreſſion
63. Deviation
64—66. Diameter
67. Double Star
67*. Dichotomy
68—70. Earth.
(Inſert Q *above p on the right-hand Globe, at the end of the line* C Q, *and inſert* S *on the middle of the line p,p.)*
X. Fig. 71—73. Earth.
(Fig. 71. *x. ſhould be over the Globe on the* left *of the figure, and* T under *the Globe on the ſame ſide, and t ſhould be* under *the Globe on the* right. *Fig.* 73. *Inſtead of d read b, at the bottom of the line* B C
74. Ferguſon's Eclipſareon.
(Inſert C *on the braſs arch below e)*
75. Eclipſe.
(For C *read c, and for c read* C)
76. Eclipſe
(Inſert b at the end of the line A *c)*
77. Eclipſe
(Inſert A *at the upper end of the line* L *t, and dele* C)
XI. Fig. 78. Eclipſe
79. Eclipſe
(This figure is, by an error of the preſs, referred to as fig. 97.)
80, 81. Eclipſe
(Theſe figures are not referred to, but the theorems to which they pertain, follow immediately after the theorems belonging to fig. 79.)
82—89. Eclipſe
XI. No. 2. Fig. 90—98. Eclipſe
XII. Fig. 99. Eclipſe, Hindû Computation
100. Mr. Pond's Machine to illuſtrate the Phenomena of Eclipſes
(The letters of reference have been omitted in this Plate; but the Machine will eaſily be underſtood from inſpection.)
101. Ecliptic

ASTRONOMY.

PLATE
XII. Fig. 102. Elevation
103. Elliptic
104. Elongation
105. Epicycle
106. Equal Altitude
107—109. Evection
(The letter A *is wanting at the top of the line* TBC. *In the theorem (twice) for* " *the ſmall circle* ACB," *read* " AGB.")
109.* Equator
XII. Fig. 100. Ecliptic.
(The reference to N V, *fig.* 100, *ſhould be to* N V, *fig.* 102.)
102. Poles of the Ecliptic, Equator, and Orbs of Venus
103.* Obliquity of the Ecliptic
(Referred to as fig. 103.)
107.* Equation of the Centre
108. No. 1, 2. Time
109.** Time
110. Equinox
XIII. Fig. 110—113. Excentric
114, 115. Galaxy
(The reference to fig. 114. *ſhould be to fig.* 115; *and the reference to fig.* 115. *ſhould be to fig.* 114.)
116. Geocentric
XIV. } XV. } Fig. 117. Globe, method of exhibiting Stars, Circles, &c. upon
118, 119. Conſtruction of a Celeſtial Globe
120. Quadrant of Altitude
121. Conſtruction of a Celeſtial Globe
122. Ferguſon's Celeſtial Globe
123. Planetary Globe
XV. Fig. 124—138. Gravitation
XVI. Fig. 138. Heat
139. Heliocentric Latitude
140. Hemiſphere, Horizon, Tropics
141. Horizon
142. Hour
143—146. Jupiter
147. Latitude
148. Reduction
XVII. Fig. 1. Longitude
2. Mars
3, 4. Meridian Line
5—16. Moon
XVIII Fig. 1, 2. Nodes
3. Paracentric
(The reference to fig. 2. *under this article, ſhould be to fig.* 3. *The figure wants a curved line drawn from* A to B *over q.)*
4—7. Parallax
8—14. Moon's Parallax
15. Venus's Parallax
16. Particula Exſors
17, 18. Penumbra
(Figures 16, 17, 18, *are omitted in this Plate, and form Plate* XIX. *fig.* 1, 2, 3, *reſpectively.)*
XIX. Fig. 1. Particula Exſors
(Referred to as Plate XVIII. *fig.* 16.)
2. Penumbra
(Referred to as Plate XVIII. *fig.* 17.)
3. Penumbra
(Referred to as Plate XVIII. *fig.* 18.)
3*—6. Planet

PLATE
XIX. Fig. 7. Preceſſion of the Equinoxes
7.* Proſthaphæreſis
8. Quadrant, Horodictical
9. of Altitude
10. Reduction to the Ecliptic
11. Refraction, Aſtronomical
12. Retrogradation of Planets
13. of the Sun
14—16. Ring of Saturn
XX. Fig. 1—3. Satellites of Jupiter
4. Configuration
5. Sphere, Armillary
(*For this figure, ſee Aſtronomy, Plate* III. *fig.* 14.)
6. Sphere, Ptolemaic
7. Copernican
8—13. Stars
14. Syſtem, Ptolemaic
15. Pythagorean and Copernican
16. Egyptian
17. Tychonic
XXI. Fig. 1. Syſtem, Solar
2. Times of the Planets
3. Velocities of Planets
4. Aſcending Nodes
XXI. Fig. 5—7. Trigon
8—11. Venus
12. Year
13—22. Whirling Table
XXII. Fig. Projection on the Plane of the Ecliptic of the Parabolic Orbits of 72 Comets
(*This Plate is publiſhed without any number.*)
I. Northern Hemiſphere
II. Southern Hemiſphere
Conſtellations, *Plate* I. Orion
Plate II. Urſa Major
Urſa Minor

ASTRONOMICAL INSTRUMENTS.

I. Fig. 1. Aſtrolabe
2. Davis's Quadrant, or Back Staff
3. Croſs Staff, or Fore Staff
4. Quadrant
6. Nocturnal or Star Dial
7. Newton's Quadrant
8. Elton's Quadrant
II. Fig. 1—3. Mayer's Circle
4—9. Borda's Circle
III. Fig. 1, 2. Engliſh Reflecting Circle, by Troughton
IV. Fig. 1. Graduated Circle, with two Verniers
2—4. three Verniers
5. Mendoza's Circle
V. Ramſden's Aſtronomical Circle
VI. Borda's Repeating Circle, without reflection
VII. Troughton's Repeating Circle,
Fig. 1. General View of the Inſtrument.
2. View, with the Circle, Index, &c. detached
VIII. Circle, by the Rev. F. Wollaſton
IX. Portable Circle, by Troughton
X. Troughton's Mural Circle
XI. Fig. 1. Short's Portable Equatorial Inſtrument
2. Ramſden's Ditto
3. Dollond's Ditto

ASTRONOMICAL INSTRUMENTS.

PLATE
XI. Fig. 4. Fayrer's Equatorial Inſtrument
XII. Fig. 1. Nairne's Portable Equatorial Inſtrument
2. Ramſden's Refraction Apparatus
4. Dollond's Ditto
3, 4. Object Glaſs Micrometer
XIII. Fig. 1. Graham's Equatorial Sector
2. Refraction
3. Smeaton's Micrometer
4. Refraction
5. Equatorial Stand of a Teleſcope, by Smeaton
XIV. Troughton's Univerſal Equatorial Inſtrument
XV. Shuckburgh's Equatorial Inſtrument
XVI. Troughton's Equatorial Inſtrument at Armagh
XVII. Fig. 1, 2. Siſſon's Equatorial Sector
3. Cote's Equal Altitude Inſtrument
4, 5. Earl of Ilay's Equal Altitude Inſtrument
XVIII. Fig. 1. Diviſion of Graham's Quadrant
2. Bird's Ditto
3. Duc de Chaulne's Dividing
4. Mr. Cavendiſh's Ditto
5. Quinqueſections by Mr. Cavendiſh
XIX. Fig. 1—3. Troughton's Method of graduating a Circle
XX. Fig. 4—6. Troughton's Method of graduating a Circle
XXI. Fig. 1. Graduation
2. by Clavius
3, 4. by Maſcheroni
5. Biſection of an Arc
XXII. Fig. 1—4. Smeaton's Rotative Roof
5, 6. Pearſon's Rotative Roof
XXIII. Fig. 1. Hadley's Octant
2. Cole's Quadrant
3. Gunter's Ditto
4. Graham's Mural Ditto
5. Ramſden's Portable Ditto
6. Troughton's Portable Ditto
XXIV. Fig. 1—7. Teleſcope, Dollond's Experiments on Achromatic Object Glaſſes
(*Theſe figures are on Plate* XXVIII. *to which the references ought to have been made.*)
XXIV. Fig. 1—11. Theory of the Refracting Teleſcope and Compound Microſcope
XXV. Fig. 1—8. Theory of Refracting Teleſcopes, &c.
XXVI. Fig. 1—11. Theory of the Teleſcope with reſpect to Aberrations, &c.
XXVII. Fig. 1—5. Theory of Reflecting Teleſcopes
XXVIII. Fig. 1—15. Principles of Achromatic Teleſcopes
XXIX. Fig. 1—5. Refracting Teleſcope
6—8. Five-feet Achromatic Refractor
9. Pearl Dynameter
10, 11. Jones's Ditto
12—15. Dollond's Dynameter
XXX. Fig. 1—3. Reflecting Teleſcopes
4. Brewſter's Patent Teleſcope
5—7. Scale of Minutes
8. Smeaton's Support
XXXI. Dr. Herſchel's Forty-feet Reflecting Teleſcope

BOATS.

PLATE
XXXII. Fig. 1—5. Tranſit Inſtrument
6, 7. Portable
8—12. Jones's Stand, Teleſcope, and Level
XXXIII. Zenith Sector

CANALS.

PLATE
XXXIII. Fig. 1. Graham's Zenith Sector
2. Ramſden's Zenith Sector
3—6. Dollond's Zenith Micrometer

PLATES. VOL. II.

BASSO RELIEVO—HOROLOGY.

PLATE
Bark-Beds, and Pits. See GARDENING, *Plate* I.

BASSO RELIEVO.

I. Fig. 1. An Egyptian Hieroglyphical Sphinx
2. A Hindû Baſ-relief
3. A Perſian Ditto
4. Jupiter with a Thunder and Trident
II. Fig. 1. Hercules and Apollo contending for the Tripod
2. Minerva ſubduing Hercules
III. The Tomb-ſtone of Xanthippus
IV. Fig. 1. Capital of a Column in the Weſt-door of the Cathedral of Carrara
(*This part of the Plate, fig.* 1, *is alſo in Architecture, Plate* XL.)
2. Zethus and Amphion comforting Antiope, their Mother
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BLEACHING.

I. Fig. 1, 2. Bucking
3, 4. Oxy-muriatic Acid
II. Fig. 1—7. Waſhing and Clearing
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BLOCK MACHINERY.

I. Fig. 1—4. Sawing Machine,
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4—9. Coaking Engine
III. Fig. 1, 2. Rivetting Hammer
3—7. Face-turning Lathe
IV. Fig. 1—4. Boring Machine
5—9. Cornering Saw
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6, 7. Machine for making Dead Eyes

BOATS.

I. Pahie, &c.
II. Life Boat
(*See* SHIPS, *Plate* VII.)
Boats, Conſtruction of
(*This article has been ſuperſeded by the article* WHOLE MOULDING, *in Ship Building, to which the reader is referred.*)

PLATE

CAMP.

I. Plan of a Roman Conſular Camp, according to Polybius
II. Plan of the Camp of a Roman Army, according to the Hyginian Syſtem of Caſtrametation
(*This is referred to under* CASTRAMETATION, *as Plate of Caſtrametation, fig.* 1—3.)
III. Plan of the Encampment of a Park of Artillery
(*This Plate is headed* ARTILLERY, *Encampment; and referred to under* CASTRAMETATION *as Caſtrametation, fig.* 4.)
IV. Profiles of Lines of Circumvallation, according to Vauban
Lines of Circumvallation, with Camp
Plan of a Part of the Line of Circumvallation at Phillipſburg, in 1734
Plan of a Part of the Line of Circumvallation at Arras, in 1654
(*This Plate is headed* CIRCUMVALLATION, *Camp,* V. *It is referred to under* CAMP, *as* MILITARY, *Plate* V. *and under* CIRCUMVALLATION, *without a name.*)
V.—XII. Situations proper for the Encampment of Armies, and for Engagements
(*The laſt four Plates, there being two ſubjects on each Plate, are referred to under* CASTRAMETATION, *as Caſtrametation, fig.* 4, 5, *&c.*)

CANALS.

I. Fig. 1. Level Cutting
2, 3. Side-lying Ground
4, 5. Embanking
6—13. Deep Cutting
14. Puddling
15. Lining
16—18. Reſervoirs
II. Fig. 19. Aqueduct Bridge at Kelvin, on the Forth and Clyde Canal. Plan
20. Tranſverſe Section
21. Elevation
III. Caſt Iron Aqueducts
Fig. 22. Mr. Telford's, on the Shrewſbury Canal at Long
23, 24. Mr. Fulton's
IV. Fig. 25. Embankment
26. Safety Gate
27. Weir
28, 29. Circular Weir
30. Pile Planks
31—35. Iron Railways

Plate
IV. Fig. 40—42. Canal Bridges
(*See Plate* VI. *to which the reference ought to have been made.*)
V. Fig. 36, 37. Locks
38, 39. Gates
VI. Fig. 40—42. Canal Bridges
VII. Fig. 43. Swing Bridge
44—47. Rollers, &c. for Ditto
48—52. Navigators' Tools
Map of the Canals, Navigations, and Railways of Great Britain
(*Given in the* Atlas, *Vol.* VI. *of the Plates*)

CANDLE MAKING.

Fig. 1. Apparatus for Dipping
2. Wick Broach
3. Machine for cutting Cotton
4. Tallow Cistern for Mould Candles
5. Mould Frame
6. Mould
7—12. Candle Sticks

CANNON.

I. Fig. 1. Whole-length Cannon
2. Cascable
3. Muzzle
4. Mortar
5, 6. Sea Ditto
7. Howitzer
8. Land Mortar
9. Sea Mortar
10. Howitzer
11. Mortar
12. Stone Mortar
II. Fig. 13—16. Cannon Boring
III. Fig. 17—21. Cannon Boring, &c.

CANTEENS.

I. Fig. 1. Canteen
2, 3. Cross-cutting Saw
4, 5. Tenanting or Rebating Saws
6. Bung Stave
7. Boring Machine
8. Center Bit
9. Slider
II. Fig. 10. Frame
11. Screw Hoop
12. Truss Hoop
13. Screw Hoop applied to a Canteen
14. Turning the Chime
15. Turning the Head
16, 17. Shears
18. Punching the Hoops
19. Rounding the Ends of the Hoops

CASTING.

I. Fig. 1, 2. Open Sand Casting
3. Trowel
4. Ramming Tool
5. Lifting Screw
6. Sand Casting between Flasks

Plate
I. Fig. 7—10. Method of Casting Cog Wheels
11—13. Moulds, &c. for Loam Casting

CASTRAMETATION. *See* Camp.

CHEMISTRY.

I. Fig. 1, 2. Cupalo Furnace
I. Fig. 1—5. Still
II. Fig. 1. Blast Furnace (*For fig.* 1. *read fig.* 6.)
6—9. Iron Smelting Furnace
III. Fig. 10. Alcohol
10*—13. Alembic
14. Aludel
IV. Fig 15—26. Furnaces for the Reduction of Antimony
V. Fig. 27, 28. Woulfe's Apparatus
VI. Ditto
VII. Fig. 1—4. Distillation
VII. Fig. 1—4. Blast Furnace
VIII. Fig. 1—4. Ditto
IX. Fig. 1—6. Ditto
(*The reference to Plate* IX. *fig.* 4. *under this article as* "the Ground-plan of arch, pillars, hearth, &c. of a Blast Furnace," *should be to Plate* X. *fig.* 4.)
X. Fig. 1—10. Blast Furnace
X. Fig. 1—3. Blowpipe (*See Plate* XIV. *fig.* 5—7.)
X. Fig. 1. Hope's Eudiometer
(*See Plate* XXI. *fig.* 1.)
2. Pepys's Eudiometer
(*See Plate* XXI. *fig.* 2.)
XI. Fig. 1—7. Blow-pipe
XI. Ancient Chemical Characters.
XI. XII. Blast Furnace Works, Plan and Section
XIII. XIV. Blast Furnace Works
Fig. 1. Section of the Building
2. Dam Stone
3. Dam Plate
4. Tymp Plate
1, 2. Water Regulator
XIV. Blast Furnace Works
XIV. Gasometer and Blow-pipe
Fig. 1. Hydraulic Bellows
2. Air Holder
3. Bell
4. Gas Holder
5. Glass Blower's Lamp
6. Shoe Lamp
7. Double Blow-pipe
(*Fig.* 5, 6, 7, *are referred to as Plate* X. *fig.* 1, 2, 3.)
XV. Fig. 1, 2. Air Vault
XVI. Laboratory
Fig. 1. Stand with the Apparatus
2. Retort
3. Acid Holder
4, 5. Receiver
6. Bended Tube
7. Adopter
8. Receiver
10. Nooth's Apparatus
11. Dr. Hamilton's Apparatus

PLATE
XVI. Fig. 12. Part of Nooth's Ditto enlarged
16. Pneumatic Trough
17. Supporter
18. Eudiometer Tubes
19. Mercurial Trough
20. Glafs Jar
21. Iron Ring Supporter
22. Volta's Eudiometer
23. Evaporating Veffel
24. Mattrafs
25. Proof Glafs
26. Precipitating Glafs
27. Gas Bottle
28. Muffel
29, 30. Crucible
31, 32. Crucible Stands
33. Cupel
34. Separatory Funnel
35. Iron Retort
XVII. Laboratory
Fig. 9. Apparatus for the Abforption of Gafes
13, 14. Simplified Gafometer
15. Pepys's Gafometer
XVIII. XIX. (*No Plates of thefe Numbers*)
XX. Fig. 1—3. Apparatus for the Diftillation of Pyroligneous Acid
XXI. Fig. 1. Hope's Eudiometer
(*Referred to as Plate* X. *fig.* 1.)
2. Pepys's (or Davy's) Improvement of Volta's Eudiometer
(*Referred to as Plate* X. *fig.* 2.)
3. Gay Luffac and Thenard's Apparatus
4. Berzelius's Apparatus for the Analyfis of Organic Subftances
5. Dr. Wollafton's Scale of Chemical Equivalents.

CHIARO-SCURO.

(*See* COMPOSITION, *Plate* II.)

CHIMNEY-SWEEPING.

(*See* MISCELLANY, *Plate* II.)

CLOUDS.

I. No. 1. Cirrus in different Forms
2. Cirro Stratus fubfiding on Cumuli beneath
3. Cirrus as feen before Thunder
4. Cirro Cumulus as feen before Thunder
5. A Nimbus flanked by Cirro Stratus, and giving an electrical Difcharge
6. A Range of Cumuli paffing to Cumulo Strati before Thunder
II. No. 1, 2. Cirro Stratus
3. Cirrus paffing to Cirro Cumulus
4. Cirro Stratus, Cumulus, and Cumulo Stratus, grouped

COMPOSITION.

I. Fig. 1. The "Battle of the Standard," by Lionardo da Vinci

PLATE
I. Fig. 3. The "Creation of Man," the "Tranfgreffion at the Tree of Knowledge," and "the Expulfion from Paradife," — Frefcoes of Michelangelo in the Seftine Chapel
4. "Groups of the Laft Judgment," by the fame Mafter in the fame Chapel
II. 2. "The Cartoon of Pifa," (or, according to Vafari, its chief Group,) by Michelangelo
5. "Paul preaching at Athens," from the Cartoon of Raffaele at Hampton Court
6. "The Group from the Affumption of the Madonna," in the Cupola of the Duomo at Parma, Correggio

CHIARO-SCURO.

1. The fimple Principles of Chiaro-Scuro illuftrated
2. The Conduct of Correggio in the Diftribution of his Maffes of Light and Shade exemplified in one of his Compofitions in the Duomo at Parma
3. An Example from Rubens
4. Rembrandt

CONICS.

I. Fig. 1. Ambigenal
2, 3. Afymptote
4—10. Cone
(*The reference to* truncated cone, *fig.* 8. *fhould be to fig.* 9.)
12. No. 2. (*See fig.* 3.)
20. Abfciffe (*See fig.* 2.)
31, 32. Axis (*See Geometry, Plate* IX. *fig.* 5, 6.)
33. Afymptote (*The figure thus referred to is in Geometry, Plate* IX. *fig.* 4.)
II. Fig. 1—9. Conic Sections; lines harmonically divided
10—14. Conic Surfaces
III. Fig. 15—23. Sections
IV. Fig. 24—31. Ditto
V. Fig. 31, 32. Axis (*See Geometry, Plate* IX. *fig.* 5, 6.)
32—43. Conic Sections
VI. Fig. 44—55. Sections
VII.VIII. Fig. 1—13. Ellipfe
VIII.IX. Fig. 14—26. Ditto
X. Fig. 1—12. Hyperbola
XI. Fig. 13—21. Ditto
XII. Fig. 1—16. Parabola

COTTON MANUFACTURE.

I. Fig. 1—6. Calico Printing
II. Fig. 1—5. Batting Machine
III. Fig. 1—5. Deviling
IV. Fig. 1—4. Carding Machine
V. Fig. 1—4. Drawing Frame
VI. Fig. 1, 2. Roving Can Frame
3, 4. Winding Block
(*The number has been omitted on this plate.*)
VII. Roving Frame
Horizontal Plan of the Machine called the Double Speeder

PLATE
VIII. Roving Frame, Double Speeder
Fig. 1—3. Elevation in Front
(This, like the preceding, is numbered Plate VII.)
IX. Fig. 1—6. Water Spinning Frame
X. Fig. 1—3. Throſtle Spinning Frame
XI. Fig. 1—5. Mule Spinning
XII. Fig. 1, 2. Reeling
3—5. Machine for winding ſewing Cotton into Balls
XIII. Fig. 1, 2. Doubling Machine
3, 4. Twiſting Machine
XIV. Sections of Meſſrs. Strutt's Cotton Mills at Belper
Fig. 1. Longitudinal Section
2. Croſs Section
3. Section of the Wing

CRYSTALLOGRAPHY.

(*See Plates*, Vol. V. NATURAL HISTORY)

CUTLERY.

I. Fig. 1. Two Troughs of a Grinding Mill
2, 2.* Tongs for preſſing Knife-Handles
3. Preſſing Vice
3. Spring Drill
(This is the only Plate of Cutlery)

CYCLOID.

Fig. 1—8. (*By miſtake theſe figures have been twice engraved. See* ANALYSIS, *Plate* V. *fig.* 1—8. *to which the reference is made in the letter-preſs*)

DIALLING.

I. Fig. 1. Declinator
1.* Ruler of the Declinator
2, 3. Declinator
4. Equinoctial Dial
5. Univerſal Equinoctial Dial
6, 7. Univerſal Dial
8—12. Horizontal Dial
13. Vertical South Dial
II. Fig. 14. Vertical North Dial
15. South Dial
16. Eaſt Dial
17, 18. Polar Dial
19. Dial on three Planes
20. Dials (primary)
21, 22. Vertical declining Dial
23. Inclined Dial
24. Univerſal Mechanical Dial
(*For fig.* 25, 26, *ſee Plate* IV.)
III. Fig. 27, 28. Cylindrical Dial
29, 30. Portable Dial
31—33. Univerſal Dial on a Croſs
IV. Fig. 25, 26. (*of Plate* II.) Moon Dial
34, 35. Ring Dial
36. Tide Dial (*See* MISCELLANY, *Plate* XXV. *fig.* 10.)
36, 37. Dials conſtructed by a Globe
38—41. Dialling Cylinder
42. Dialling Scales

PLATE

DOCKS.

Docks at Liverpool, 1808
Docks at London, 1808

DRAWING.

I. II. III. Fig. 1, 2. Outlines of the Human Face
3. Shading, Hatching
4, 5. Outlines of the Human Face
6. Shading, Hatching
IV. Iſis Magna Mater
V.—VII. (*No Plates of theſe Numbers*)
VIII. From an original Drawing by G. Pouſſin
IX. Ditto
X. Landſcape from an original Drawing of Claude Lorraine

DRAWING INSTRUMENTS.

I. Fig. 1—11. Compaſſes
(*For fig.* 5, *ſee Plate* TURNING, *fig.* 29.)
I. Fig. 1. Peacock's Delineator
2, 3. Miſs Edgeworth's Ditto
4, 5. Ramſden's Optigraph, by Jones
6, 7. Wollaſton's Camera Lucida
II. Fig. 1, 2. Oval
3—6. Farey's Elliptograph
7. Douglas's reflecting Protractor

ELECTRICITY.

I. Prieſtley's Battery
I.* Fig. 2. Teyler's Battery
(*This Plate is referred to as Plate* I. *fig.* 2.)
3. The Frame ſeparate
(*See Plate* XV. *fig.* 7.)
4. The Whole Battery
(*As this ſo nearly reſembles the Battery repreſented in Plate* I.* *it has been deemed unneceſſary to give it on a ſeparate Plate.*)
Bell (*See Plate* V. *fig.* 38.)
II. Fig. 4—9. Condenſers
III. Fig. 10—20. Diſchargers
21—25. Cavallo's doubler
IV. Fig. 26—37. Electrical Experiments
V. Fig. 38—50. Ditto
VI. Electrical Configurations
(*This Plate is not numbered*)
VII. & XIV. (*One Plate*) Fig. 51, 52. Electrical Experiments. Electrical Flyers
53, 54. Inflammable Air-Piſtol
55. Volta's Inflammable Air-Lamp
Fig. 1, 2. (XIV.) Electrophorus
VII. Fig. 1, 2. Hawkſbee's Electrical Machine
3. Abbe Nollet's Machine
4. Dr. Watſon's Ditto
5. Mr. Wilſon's Ditto
VIII. Fig. 6—9. Electrical Machines
IX. Fig. 10. Mr. Beccaria's Machine
11. Common Machine
12. Nairne's Ditto
18. Van Marum's Ditto
(*Referred to as on Plate* XI.)

PLATE

X. Fig. 13. Nairne's Machine, with a Perfon electrifying his Shoulders
14. Ditto, his Leg
15, 16. Pearfon's Machine
18. (*See Plate* IX.)

XI. Fig. 22. Cuthbertfon's Electrical Machine
(*This is numbered Plate* X.)

XII. & XIII. Fig. 1—12. Electrometers
13—15. (*Plate* XIII.) Ditto

XIII. Fig. 16—23. Electrometers

XIV. Fig. 1, 2. Electrophorus
(*On Plate* VII. & XIV.)

XV. Fig. 1. Medical Electricity. Machine for electrifying the Teeth
2, 3. Thunder-Houfe
4, 5. Torpedo
6. Brufh
7. No. 1, 2. Infide Connecting Frame of Teyler's Battery
(*Referred to as Plate* I. *fig.* 3.)

ENGINE.

I. Fig. 1—7. Salmon's Weighing Machine
(*This is numbered Plate* II.)

II. Fig. 1—3. Cutting Engine, by Hindley

III. Fig. 1—5. Ditto
6—12. Rofe Engine, by Holtzapffell and Deyerlien

IV. Cutting Engine, by Rehe

V. Fig. 1. Ditto, for Worm Wheels
2. Annular Wheels
3. Short Arbor
4. Engine for Racks
5. Cutter Arbor

VI. Fig. 1—6. Cutting Engine, by Rehe, for fharpening Cutters

VII. Ramfden's dividing Engine, Perfpective View

VIII. Fig. 2—4. Ramfden's dividing Engine

IX. Fig. 5—14. Ditto

X. Engine for cutting the Screw of Ramfden's Circular dividing Engine
Fig. 1. Elevation
2. Plan

XI. Engine for cutting the Screw of Ramfden's ftraight Line dividing Engine
Fig. 1. Plan
2. Elevation

XII. Fig. 1—3. Ramfden's Engine for dividing ftraight Lines

ENGRAVINGS, Early British.

Fig. 1. From the front of King Alfred's Jewel
From the back of King Alfred's Jewel
2. Impreffion from the engraved Seal of Anfelm, the Primate
3. Engraved Brafs on the Tomb of William de Fulbourn, in Fulbourn Church, Cambridgefhire

FLAGS.

(*See* Heraldry, *Plate* VII.)

PLATE

FARRIERY—Horfe-Shoeing.

I. Concave Fore-fhoe, or S. Bell's Shoes
Racing Hind-fhoe
Fore-fhoe
Seated Fore-fhoes
Froft-fhoe
Shoe to prevent cutting
Hind-fhoe
Fore-fhoe with a Joint in the Toe
(*This is the only Plate of Farriery.*)

FEATHERS.

(*See above, under* Anatomy, Comparative.)

FENCES.

XIX. (*The Plate fo entitled and numbered is* Agriculture, *Plate* XIX.)

FORTIFICATION AND TACTICS.

I. II. & IV. Fig. 1. Angle at the Centre
1. Baftion, &c.
2, 3. Cavalier
4, 5. Expenfe Magazine
(*Thefe figures have been omitted, as unneceffary in a Work of this nature.*)
6—14. Field Fortification
(*See Plate* III.)

(II.) Fig. 1, 2. Flank of an Army
(*The writer of this article in the Cyclopædia died without furnifhing the figures. They are not, however, effential to the underftanding of the defcription.*)
1, 2. Battery
(*Fig.* 1. *on Plate* II. *is the figure referred to in the article Battery, as fig.* 21. *No.* 2. *Fig.* 2. *is the figure referred to as* 23. *No.* 2.)
3. Battery en Barbe, or Barbet
(*Fig.* 3. *is the figure referred to as Plate* III. *fig.* 25.)

III. Fig. 1—4. Eçhellon.
5. Enfilade
6—14. Field Fortifications
(*Referred to as on Plate* I.)

(IV. *on Plate* I.) Fig. 1—3. Breaftwork.
(*Thefe figures have been omitted, as the nature of Breaftwork will be fufficiently underftood by the view of the figures of Battery, on Plate* II.)
4—10. Fort

V. Fig. 1—6. Conftruction

VI. & VII. Fig. 7—14. Ditto

VIII. Fig. 15. Belidor's Method
(*This figure is on the Plate marked* Fortification, *Plates* VI. VII. VIII.)
16—19. Crown-work, &c.
(*The articles in which thefe figures are referred to, were written by Mr. Glennie, and the defcriptions were taken from an unpublifhed work of his own. He died without furnifhing the figures.*)

V. Fig. 1, 2. Irregular Fortification
3. Profile of a Fortification
4. Fortified Place

PLATE
V.* Fig. 5. Regular Fortification befieged
6. Glacis
7. Gallery
8. Gabion
VI. Fig. 1. Horn Work
2. Double Horn Work
3—6. Line
7. (*The fame as fig.* 4.)
8. Lunette
VI. VII. VIII. 9. Mantelet
10—15. Mine
(VII.) Fig. 38. Battery (*See Plate* II.)
2, 3. Parallel of Arms (*See Plate* V.* *fig.* 5.)
4. Ravelin
5. Redoubt
6—8. Tenaille
9. Tenaillon
(VIII.) Fig. 15. Belidor's firft Method.
(*Plates* VI. VII. *and* VIII. *are on one Plate.*)

FURNACE.

I. Fig. 1—3. Air Furnace
II. Fig. 1. Dr. Black's Air Furnace
2. Common Air Furnace
3. Mr. Knight's Ditto
4. Mufhet's Ditto
5. Knight's Portable Ditto
6—11. Dr. Black's Ditto
III. Fig. 1, 2. Furnaces ufed by Mr. Mufhet for his Experiments on Iron and Steel
3—5. Tobacco Pipe Maker's Furnace
III. & IV. (*This Plate is* IRON MANUFACTURE, *Plate* III. IV., *and is placed among the Plates belonging to that article.*
Fig. 3, 4, 5, *referred to under the article* FURNACE, *Aikin's Improvement of Lewis's Furnace, are on that Plate.*)
V. Fig. 1—9. Furnace for enamelling Watch Dial Plates
10, 11. Mr. Bone's Enamelling Furnace

GARDENING.

I. Bark-Beds and Pits for fucceffion of Pine-apple Plants; and other tender Exotics
Fig. 1, 2. Plan
3. Bark-Beds
4. Plan and Section of Bark-Bed and Bark-Shed
5. Section of Fig. 1, 2.
(*This Plate is marked* BARK-BEDS and PITS.)
II. Confervatory and Green-Houfe.
Fig. 1—4. Green-Houfe
5, 6. Confervatory
III. Fig. 1, 2. Improved Hothoufe
3. Loudon's Hothoufe for Pines
4, 5. Nurfery Houfe for Ditto

GEOGRAPHY.

I. Fig. 1. Diftance
2, 3. Horizon
4—8. Map

GEOMETRY.

PLATE
II. Fig. 9. Meridian
Pole (*See* NAVIGATION, *Plate* I. *fig.* 1.)
10—14. Tide
(*See* NAVIGATION *fig.* 4—8.

GEOLOGY.

I.—IV. (*The Plates of* GEOLOGY *are with the* NATURAL HISTORY *Plates in the fifth Volume.*)
II. Gun-Flints
(*See* MISCELLANY, *Plate* II.)

GEOMETRY.

Acute Angle
(*Referred to as* GEOMETRY, *fig.* 1. *fee* GEOMETRY, *Plate* II. *fig.* 15, D A E.)
I. Fig. 1. Alternate Angles
2—13. Altitude, Method of meafuring
14. Altitude and Diftance, Method of meafuring
14. Analyfis
(*See* GEOMETRY, *Plate* IX. *fig.* 1.)
II. Fig. 15—26. Angle
27, 28. Antiparallel
29—34. Application
35, &c. Bevel
(*See the following Plate.*)
III. Fig. 12. Sector
(*See Plate* XIII. *fig.* 12.)
35—39. Bevel, &c.
(*Referred to as Plate* II. *fig.* 35, &c.
Fig. 38, Bafe, *fhould be referred to fig.* 46*, *on the fame Plate.*)
39. Bafe of a Cylinder
(*See* GEOGRAPHY, *Plate* IX. *fig.* 7.)
40—44.* Bevel
45—48. Chord
45.* Arch
46.* Bafe
48.* Cardioide
49.* Catenaria
50. Complement of a Parallelogram
(*See* GEOMETRY, *Plate* IX. *fig.* 8.)
51. Angle of Contact
(*See* GEOMETRY, *Plate* IX. *fig.* 9.)
52. Cube
(*See* GEOMETRY, *Plate* IX. *fig.* 10.)
IV. (*Referred to as Plate* III.)
Fig. 1. Cyclograph
(*See* GEOMETRY, *Plate* IX. *fig.* 11.)
Fig. 49—61. Circle
78. Diameter
(*See Plate* VI. *fig.* 78.)
3, 4. Cylinder
(*Thefe figures are inferted on* ANALYSIS, *Plate* II.)
V. Fig. 62—73. Circle
VI. Fig. 74. Decagon
75—77. Diagonal
78. Diameter
(*Referred to as on Plate* IV.)
79. Diameter, No. 1, 2, 3.
80. Dirigent
81. Divifibility
82. Divifion

PLATE
VI. Fig. 83. Decagon
(*For* Dodecagon, *see* Hexagon, *Plate* VIII. *fig.* 97.)
84. Diophantine
85, 86. Distance
VII. Fig. 87. Extreme and Mean Proportion
88—95. Frustum
VIII. Fig. 96. Gnomon
97. Hexagon
98, 99. Honeycomb
100. Hypothenuse
101. Inclination of Planes
102. Indivisibles
103, 104. Internal Angle
105. Isosceles Triangle
IX. Isoperimetry, Fig. 1—17.
(*See* ANALYSIS, *Plate* IX. *fig.* 1—17.)
IX. Fig. 1. Analysis
(*Referred to as* GEOMETRY, *Plate* I. *fig.* 14.)
2. Construction
(*Referred to as* ANALYSIS, *fig.* 20.)
3. Hyperbolic Logarithms
(*Referred to under* Function, *as* ANALYSIS, *Plate* VII. *fig.* 5.)
4. Asymptote
(*Referred to as* CONICS, *fig.* 33.)
5, 6. Axis of the Ellipse and Hyperbola
(*Referred to as* CONICS, *fig.* 31. 32.)
7. Cylinder, Base of
(*Referred to as* GEOMETRY, *Plate* III. *fig.* 39.)
8. Complement of a Parallelogram
(*Referred to as* GEOMETRY, *Plate* III. *fig.* 50.)
9. Angle of Contact
(*Referred to as* GEOMETRY, *Plate* III. *fig.* 51.)
10. Cube
(*Referred to as* GEOMETRY, *Plate* III. *fig.* 52.)
11. No. 1. and 2. Cyclograph
(*Referred to as* GEOMETRY, *Plate* IV. *fig.* 1.)
12, 13. Pyramid
(*Referred to as* GEOMETRY, *Plate* XI. *fig.* 18, 19.)
14—19. Tangent
(*Referred to as* ANALYSIS, *Plate* XV. *fig.* 1—6.)
X. Fig. 1. Line
2—5. Lunes
6, 7. Multiplication
8, 9. Octagon
10. Parallel
11, 12. Parallel Rulers
(*The reference under the article* RHOMBUS, *to Plate* X. *fig.* 11, *should be to Plate* XII. *fig.* 11.)
13. Parallelepiped
14, 15. Parallelogram
X. XI. Fig. 16. Pelecoides
17, 18. Pentagon
4, 5. Perpendicular
6. Polygon
7—11. Polygonometry
12, 13. Porism
(*For fig.* 12, Prism, *see fig.* 15.)
14. Geometry of Position
15. Prism
(*Referred to as fig.* 12.)
16, 17. Proportional
18, 19. Pyramid
(*See* GEOMETRY, *Plate* IX. *fig.* 12, 13.)

GEOMETRY.

PLATE
XII. Fig. 1. Quality
(*The reference under the article* RHOMBOIDES, *to fig.* 1. *should be to fig.* 10.)
2. Reciprocal Figures
3, 4. Rectangle
5—8. Reduction
9. Regular Body
10. Rhomboides
(*Referred to as fig.* 1. *See above.*)
11. Rhombus
(*Referred to as* GEOMETRY, *Plate* X. *fig.* 11.)
12. Ring
13. Similar Curves
(*Referred to as* GEOMETRY, *Plate* XIII. *fig.* 14.)
Tetrahedron
Cube
Octahedron
Dodecahedron
Icosahedron
XIII. Fig. 1—3. Scale
4. Secant
5—12. Sector
(*Fig.* 12. *is referred to as* GEOMETRY, *Plate* III. *fig.* 12.)
13. Segment
14. Similar Curves
(*See Plate* XII. *fig.* 13.)
17, 18. Staff
(*See Plate* XIV. *fig.* 12, 13.)
XIV. Fig. 1. Solid Angle
2. Solidity
(*The reference under* SPHERE, *should be to fig.* 3.)
3. Sphere
(*The reference to fig.* 3, *under* SPHEROID, *should be to fig.* 4.)
4. Spheroid
5—9. Spiral
(*The reference to fig.* 4—8. *under* SPIRAL, *should be to fig.* 5—9. *respectively.*)
10, 11. Square
(*For Stereographic Projection, see below, fig.* 14—16.)
12, 13. Staff
(*Referred to as* GEOMETRY, *Plate* XIII. *fig.* 17, 18.)
14—16. Stereographic Projection
(*Referred to as fig.* 10—12.)
XV. Fig. 1. Sub-contrary
2. Subnormal
3. Tangent
4. Tetrahedron
5. Triangle, Equilateral
6. Scalene
7. Rectangular
8. Obtusangular
9. Triangles, Similar
10. Mensuration of
11, 12. Properties of
13. Isosceles
14—17. Triangles
18. Vertex
19. Ungula
20, 21. Goldman's Volute

PLATE

GLAZING CLOTH.

(*See* MISCELLANY, *Plate* II.)

GUNNERY.

Fig. 1. Gun Pointing
2. Nock's improved Breech
3. Gunnery. Theorem for determining the Velocity of a Ball
4. Petard
5. Quadrant
6. Bomb
7. Caliber Compaſs

HAIR.

(*See above*, ANATOMY, COMPARATIVE)

HERALDRY.

I. Partition Lines
Eſcutcheons
Roundles
Metals and Colours
Furs
Abatements
II.—VI. Abatements
VII. Flags and Standards, Military and Naval
VIII. Orders of Knighthood, Stars, Collars, Badges, &c.
IX. Ditto
X. Crowns, Coronets, Mitres
X. B Ditto
XI. Achievements borne at the Interment of the Earl of Chatham, in Weſtminſter Abbey
XII. Funeral Achievements, Eſcutcheons, Hatchments
XIII. Heraldic Crowns, Coronets, and Helmets
XIV. Royal Diſtinctions
Diſtinctions of Houſes
Bar
(*See Plate* III.)
Barry, &c.
(*See Plate* III.)
Hatchments
(*See Plate* XII.)

HORNS.

(*See above*, ANATOMY, COMPARATIVE)

HOROLOGY.

I. Fig. 1—3. Antient Clepſydræ
II. Fig. 1—6. Modern Clepſydræ
III. Fig. 1—5. Clock Movement
IV. Fig. 1—7. Clock Movement
V. Fig. 1—4. Chime Work in the Clock Room of St. Margaret's, Weſtminſter
VI. Ditto
VII. Fig. 1—4. Chimes, Pleyel's German Hymn
VIII. Fig. 1—5. Ancient Clock, by Henry De Wick, 1370

HOROLOGY.

PLATE
IX. Fig. 1—3. Thirty-hour Clock, with Alarum, and Count Wheel Striking Work
X. Fig. 1—3. Callipering
XI. Fig. 1—3. Portable Eight-day Clock
XII. Fig. 1—4. Dial Work, and Striking Part of an Eight-day Clock
XIII. Fig. 1—7. Mudge's Time Keeper
XIV. Fig. 1—7. Arnold's and Earnſhaw's Chronometers
XV. Fig. 1—8. Brockbank's Chronometer
XVI. Clock with Chimes
XVII. Ditto
XVIII. Fig. 1. Clock, by Dr. Franklin
2. Mr. Ferguſon
3—5. Second, by Ditto
XIX. Fig. 1—20. Clock Tools
Compenſation Balance
(*See Plate* XXIX.)
XX. Fig. 1—18. Clock Tools
XXI. Fig. 1—17. Ditto
XXII. Fig. 1—6. Aſtronomical Clock, by Reid
XXIII. Fig. 1—4. Aſtronomical Clock, by Brockbanks
XXIV. Fig. 1, 2. Equation Clock, by Enderlin
XXV. Clock Work
Fig. 1. Striking-part, with one Wheel and one Pinion
2. Strike, or Silent
3. Endleſs Cord of Huygens
4. Forcing Spring
5. French Forcing Spring
6. Bolt and Shutter
XXVI. Clock
Fig. 1. Maſſey's Striking-part
2, 3. Prior's Striking-part
XXVII. Fig. 1—9. Troughton's Pendulum
XXVIII. Fig. 1—7. Compenſation Curbs
XXIX. Fig. 1—11. Compenſation Balances
XXX. Compenſation Curbs and Balances
Fig. 1. Mr. Cumming's
2. Scott's
3—5. Hardy's Balance
6. Berthoud's
7, 8. Hardy's Iſochronal Compenſation
XXXI. Fig. 1, 2. Dial Work of a Clock, ſhewing the Moon's Age, Phaſes, &c.
XXXII. Fig. 1, 2. New Dial Work of a ſmall Spring Clock, ſhewing the Phenomena of the Moon
XXXIII. Fig. 1—3. Dial Work
XXXI. Eſcapements
Fig. 1—5. Atwood's Theory of Balance
6. Crown Wheel
7. Huygens's Ditto
8. Dr. Hooke's Ditto
XXXII. Eſcapements
Fig. 1. Sully's
2. Graham's Horizontal
3. Anchor Eſcapement
4, 5. Graham's Dead Beat
6. Grignon's Ditto
7. Bennet's Ditto
8. Thiout's Eſcapement
XXXIII. Eſcapements
Fig. 1. Berthoud's
2. Smeaton's

PLATE
XXXIII. Fig. 3. De Bethune's Escapement
4. Amant's
5. Harrison's
6. Cummings's
7. Mudge's
8. Peter le Roy's
XXXIV. French Escapements for Chronometers
Fig. 1—3. Peter le Roy's improved
4. Berthoud's detached
5. improved, No. 60
6. without a Spring
7. with a Spring and Detent in No. 9
8. Isochronal
XXXV. Escapements
Fig. 1, 2. Mudge's
3. Margett's
4. Robins's
5. Duplex
6. Escapement à Virgule
7. Tompion's
8. free, for a Pendulum
XXXVI. Escapements, &c.
Fig. 1. Berthoud's Escapement
2. Nicholson's
3, 4. Goodriche's
5. Massey's
6, 7. Theory of the Fusee
XXXVII. Fig. 1—3. Fusee Engine acting by an inclined Plane
4—8. Fusee Engine, with a Screw and Lever
XXXVIII. Fusee Engines and Fusee Frame
Fig. 1. Common Fusee Engine
2. Old Fusee Engine
3. Fusee Frame
XXXIX. Fig. 1—3. Compensating Pendulums
4. Graham's Mercurial
5. Regnauld's
6, 7. Deparcieux's

PLATE
XXXIX. Fig. 8. J. le Roy's Compensating Pendulum
XL. Compensating Pendulums
Fig. 1. Ellicott's
2. Troughton's Rhomboidal
3. Berthoud's
4. Troughton's Mercurial
5. Dr. Fordyce's
6. Ward's
7. Reid's
8. Doughty's
9. Ritchie's
10. Nicholson's
XLI. Remontoir Escapements
Fig. 1—4. Haley's
5, 6. Breguet's
7. Hardy's
XLII. Remontoir Escapements
Fig. 1, 2. De Lafon's
3. Massey's
4—6. Mendham's
7, 8. Prior's
XLIII. Fig. 1—3. Recordon's Renovator
4—9. Watch, with Music
XLIV. Fig. 1—8. Common Watch
9—14. Alarum Watch
15—18. Rolling Watch
XLV. Fig. 1, 2. Repeating Watch
3. Wheel Work
4—6. Spring, &c.
XLVI. Fig. 1—8. Repeating and Alarum Watches
XLVII. Repeating Watches
Fig. 1—5. Elliot's
6. Infallible Repeater, by Berrollas
7. Calliper
8. Detached Parts

HORSE.

(*See* MISCELLANY, *Plate* XX. *fig.* 7.)

PLATES. VOL. III.

HYDRAULICS—NAVAL ARCHITECTURE.

PLATE

HYDRAULICS.

I. Fig. 1—4. Contracted Vein, &c.
5. Counterpressure
6—17. Discharge of Fluids
II. Fig. 18. Dr. Halley's Diving Bell
19. Section of Triewald's Ditto
20. Spalding's Ditto
21—27. Klingert's Diving Machine
III. Dredging Machine used to deepen the Channel of the Thames
Fig. 1. Elevation
2. Plan
III.* Fig. 3. Eddy
4. Fire Engine

PLATE
III.* Fig. 5—11. Mr. Newsham's Fire Engine
IV. Fig. 1—6. Rowntree's Fire Engine
V. Fig. 1—9. Fluids
VI. Fig. 1—6. Fluids
7—13. Fountain
VII. Fig. 1—8. Fountains
VIII. Fig. 1, 2. Floating
3, 4. Hydromancy
(*Referred to as fig.* 4, 5.)
5. Hiero's Crown
6. Tantalus's Cup
(*Tantalus's Cup is referred to this Plate, but inserted Plate* XIV. *fig.* 10.)
IX. & X. Hydrometer
Fig 1. Common
2, 3. Clark's

PLATE
IX. & X. Fig. 4. Deſaguliers's Hydrometer
5. De Luc's
6. Nicholſon's
(X.) Fig. 7, 8. Hydroſtatic Balance
9. Deſaguliers's
10. Martin's
11. Hydroſtatic Bellows
12—14. Ditto, by Ferguſon
(*IX. and X. form one Plate, which ſhould have been numbered Plate* IX. *&* X.)
15. No. 1—3. Hydroſtatic Inſtrument
(*See Plate* XII. *fig.* 14. *No.* 1—3.)
Fig. 15, 16. Hydroſtatical Paradox
(*Theſe figures are referred to as on Plate* XI. *There is no Plate of that number*)
XII. & XIII. Fig. 1—7. Hygrometer
8. Anderſon's
9, 10. Dr. Hooke's
11. Dr. Hales's
12, 13. Ferguſon's
14. No. 1—3. Bradford's Hydroſtatical Inſtrument
(*Referred to as Plate* X. *fig.* 15.)
(XIII.) Fig. 1—4. Smeaton's Hygrometer
(XII. *&* XIII. *fig.* 1—4. *are on one Plate*)
XIII. Hygrometer
Fig. 5, 6. De Luc's
7. Sauſſure's
8, 9. De Luc's Whale Bone
10. Hungarian Machine
(*Referred to as fig.* 1.)
11. Forſter's Oat Beard Hygrometer
12. Kater's Hygrometer
XIV. Fig. 1. Jet d'Eau
2. Moiſture
3. Perſian Wheel
4. Pump, Common Sucking
5. Forcing
6. Lifting
7. Cteſebe's
8. Chain
9. Parts of Ditto
10. Tantalus's Cup
(*Referred to as Plate* VIII. *fig.* 6.)
XIV. XV. Fig. 9, 10. Rope Machine
11—13. Archimedes' Screw
14, 15. Water Screw
(XV.) Fig. 1—5. Siphon
6. Papin's, or Wirtemberg
7. Springs
8—10. Syringe
11—14. Waves
XV. Pumps
Fig. 1—8. Captain Jekyl's Improved Ship Pump
9. Martin's Pump

HYDROSTATICS.

I. Fig. 1—17. Capillary Tubes, &c.

INCUBATION.

(*See above,* ANATOMY, COMPARATIVE.)

PLATE

IRON MANUFACTURE.

I. Iron Forge
Fig. 1. Plan
2. Elevation
II. Fig. 1. Section of the Finery. Front View
2. Another Section. Side View
3. Enlarged View of the Tuyere Iron
4. Tuyere Iron with the Ciſtern
5. Tongs for taking the Balls from the Furnace
6. Iron Fork
7. Iron Ladle
8. Face of the Stamping Iron
9. Face of a Hammer for drawing out Bars
10. Balling Furnace. Section
11. Elevation
III. IV. (*Lettered* FURNACE, *Plate* III. IV.)
Fig. 1. Reverberatory Furnace for melting large Quantities of Metal. Section
2. Section of a Cupola
(IV.) 3—5. (*Theſe are the Figures referred to under the article* FURNACE, "Aikin's Improvement of Lewis's Furnace," *as* FURNACE, *Plate* IV. *fig.* 3—5.)
f 7. End Elevation of the Reverberatory Furnace
IV. Smeaton's Forge Hammer Machinery for Kilnhurſt Forge
Fig. 1. Elevation in Front
2. Elevation Sideways
(*The reference to Plate* IV. *under* ROLLING MILL, *ſhould be to Plate* VI.)
V. Rollers for making Bar Iron
Fig. 1. End Elevation, Rollers for Square Bars
2. Side Elevation. Ditto
3. Plan. Rollers for flat Bars
4. Side Elevation. Ditto
5. Plate Rollers. End Elevation
6. Ditto. Side Elevation
VI. Rolling and Slitting Mill at Meſſrs. Walkers' Iron Works, Rotherham
Fig. 1. Plan
2, 3. Elevations
(*This is referred to as Plate* IV. *under the article,* ROLLING MILL. *The number is omitted on the Plate*)
VII. Steel Converting Furnace
Fig. 1, 2. Sections
3. Plan
4—7. Mould for making Crucibles, &c.
(*This Plate is not numbered*)
VIII. Mill for tilting Steel, by Smeaton
Fig. 1. Plan
2. Elevation

LAMPS.

I. Fig. 1—3. Argand's
4. Lamp Cotton
5, 6. Kier's Lamp
7. Rolling Lamp
II. Fig. 1—4. King's Hydro-Pneumatic Lamp

PLATE
II. Fig 5, 6. Barton's Lamp
7, 8. Porter's Automaton Lamp

LATHE.

Fig. 1—10. Mr. H. Maudflay's Lathe

LIGHT.

Fig. 1—19. Luminous Animals
(*See Plates*, Vol. V. NATURAL HISTORY)

LIGHT-HOUSE.

Fig. 1—8. Light-Houfe on the Eddyftone Rock

MAGNETISM.

I. Fig. 1—12. Compafs
II. Fig. 13—16. Ditto
III. Fig. 17—22. Variation Compafs
IV. Fig. 22—29. Dipping
(*For fig.* 27. *fee Plate* V.)
30. Dipping Needle, by Lorimer
(*Referred to as fig.* 3.)
V. Dipping Needle, by Nairne, on Mr. Mitchel's Plan
VI. VII. Fig. 1—12. Magnet
(VII.) Fig. 1. Ditto
(VI. & VII. *fig.* 1. *are on one Plate*)
VII. Fig. 2—16. Magnet

MAMMALIA.

(*See above*, ANATOMY, COMPARATIVE; *alfo*, *Plates*, Vol. V. NATURAL HISTORY)

MASONRY.

I. Fig. 1. Reticulated
2. Incertain
3. Ifodomum
4. Pfeudifodomum
5. Roman Emplection
6. Greek Emplection
II. Arches
Fig. 1. No. 1. Plano Cylindroidic Arch
No. 2. Plano Cylindric Arch
2. No. 1. Cylindro-Cylindric Arch
No. 2. Cylindro-Cylindroidic

MAST, PLATE OF.

(*See* SHIPS, *Plate* VIII.)

MECHANICS.

I. Fig. 1, 2. Acceleration
3. Angular Motion
(*See Plate* II. *fig.* 1.)
3, 4. Angle of Elevation
5—7. Axis in Peritrochio

MECHANICS.

PLATE
II. Fig. 8—11. Balance
12. Bent Lever Balance
13. Affay Balance
14. Ballaft
(*On this figure, the dotted line perpendicular to the line* 1—3. *fhould have the letter n at the upper end and c at the bottom; and g fhould be on the dot-line oppofite to* G)
II. Fig. 1. Angular Motion
2—4. Boring Water Pipes
(*Referred to as fig.* 67—69.)
5. Crab for launching Ships
(*Referred to as Plate* XVIII. *fig.* 1.)
6, 7. Double Cylinder
(*Referred to as Plate* XXII. *fig.* 1, 2.)
8, 9. Jack for raifing Timber
(*Referred to as Plate* XXX. *fig.* 1, 2.)
10. Smoke Jack
(*Referred to as Plate* XXX. *fig.* 3.)
11—13. Lever
(*Referred to as Plate* XXX. *fig.* 4—6.)
14—17. Projectiles
(*Referred to as Plate* XXXVI. *fig.* 7—10.)
III. Fig. 15. Capftan, Common Moveable
16. Double
17. ufed at the London Docks
18. Main, or double
19. Jeer, or little
20. Mr. Plunket's
21. Caft-iron Lifter for
IV. Fig. 21. Center of Friction
22—29. Center of Gravity
V. Fig. 30—40. Ditto
VI. Fig. 41—51. Ditto
VII. Fig. 52—54. Center of Gyration
55. Center of Motion
56—60. Center of Ofcillation
Chain (*See Plate* XII.)
VIII. Fig. 61—66. Center of Ofcillation
67—69. Percuffion
IX. Fig. 70—73. Pofition
74, 75. Preffure
76—80. Rotation
X. Fig. 81—84. Central and Centrifugal Forces
85—92. Centripetal Forces
XI. 93. Centrifugal Machine
94—99. Centrobaryc Method
XII. Fig. 1—9. Chains
10, 11. Clay Mill
XIII. Fig. 1. Fore Wheels of a Crane-necked Carriage
2. Jacob's Contrivance for the Fore-wheels of a Carriage
XIV. Fig. 1, 2. Coal Meafuring
XIV.* Fig. 1—15. Water Cocks
XV. Fig. 1, 2. Compofition of Motion
(*See Plate* XVI. *fig.* 1, 2.)
XV. Fig. 1—24. Collifion
(*The reference to fig.* 22. *under theorem* VI. *of this article, fhould be to fig.* 24. *The reference to fig.* 23. *fhould be to fig.* 22. *In fig.* 23. *for* E *read* Z. *The reference to fig.* 24. *fhould be to fig.* 23.)
XV. Fig. 1—7. Comb-making
6—8. Coupling Box

PLATE
XVI. Fig. 1, 2. Compoſition of Motion
(*Referred to as on Plate* XV.)
7. Double Cone
10, 11. Prony's Condenſer of Forces
XVII. Fig. 1—4. Cork Screws
5. Corking Machine
XVIII. Fig. 1. Crab
(*See Plate* II. *fig.* 5.)
2, 3. Cranes, by Ferguſon
XIX. Fig. 1—3. Mr. Smeaton's Deſign for a Crane, for the Wool Quay, Cuſtom Houſe, London
XX. Cranes
Fig. 1, 2. White's Crane
3, 4. Braithwaite's
5. Dixon's
XXI. Fig. 1—5. Cranes, various
XXII. Fig. 1, 2. Cylinder, Rolling
(*See* DOUBLE CYLINDER, *Plate* II. *fig.* 6, 7.)
XXII. & XXIII. Fig. 3. Direction of Motion
4—6. Line of Direction
(XXIII.) Fig. 1—4. Hill's Machine for drawing Ships' Bolts
XXIII. Fig. 1—7. Mr. Dixon's Machine for Boring Cylinders, at the Falcon Iron Foundery
(*For* MILL *referred to Plate* XXIII. *ſee Plate* XXXIII.)
XXIV. Fig. 1—9. Drills
10, 11. Drilling Machine
(*This Plate is not numbered*)
XXV. Fig. 1—7. Dynamics
XXVI. Dynanometers for meaſuring the Force of Draught
Fig. 1. Mr. M'Dougale's
2. Salmon's
3. Contrivance for determining the Force required to work a Mill
XXVI. Expanding Riggers
Fig. 5—7. Mr. Flint's
8—12. Mr. Farey's
XXVII. Fig. 1—9. Fly Preſs
XXVII. Fig. 1—4. Mr. Salmon's Portable Threſhing Mill
XXVIII. Fig. 1—20. Force
XXIX. Friction and Fulling Mill
Fig. 1—3. Friction
4—6. Fulling Mill
XXX. Fig. 1, 2. Jack for raiſing Timber
(*See Plate* II. *fig.* 8, 9.)
3. Smoke Jack
(*See Plate* II. *fig.* 10.)
4—6. Lever
(*See Plate* II. *fig.* 11—13.)
XXX. & XXXVI. Fig. 1—5. Wedge
6, 7. Weight
8—13. Wheel
(*Fig.* 1—13. *are referred to reſpectively as on Plate* XL.)
(XXXVI.) Fig. 11—13. Pulley
14. Refraction
15. Solid of the leaſt Reſiſtance
16, 17. Mechanical Powers
(*Referred to as Plate* XXXII. *fig.* 18, 19.)

PLATE
XXXI. Fig. 1—5. Logwood Mill
XXXII. Fig. 1—17. Mechanical Powers
XXXIII. (*See for fig.* 18, 19. *Plate* XXX. *and* XXXVI. *fig.* 16, 17.)
Fig. 1, 2. Common Breaſt Mill
3. Dr. Barker's Mill
4. Portative or Hand Mill
XXXIV. Fig. 1—8. Flour Mill deſigned by Smeaton
XXXIV. Fig. 1—10. Motion
11. Perpetual Motion
12—15. Percuſſion
16—21. Inclined Plane
(*Referred to as Plate* XXXV. *fig.* 1—6.)
XXXV. Fig. 1—6. Colour Mill
XXXV. Fig. 1—9. Pile-driving Machine
10—12. Bramah's Machine for drawing Piles out of the Ground
(*For Inclined Plane, fig.* 1—6. *ſee Plate* XXXIV. *fig.* 16—21.)
XXXVI. Fig. 7—10. Projectiles
(*See Plate* II. *fig.* 14—17.)
11—13. Pulley
14. Refraction
15. Reſiſtance, Solid of the leaſt
(*For theſe figures,* 11—15. *ſee Plate* XXX. *and* XXXVI.)
XXXVII. Fig. 1—10. Rotation
XXXVIII. Screws
Fig. 1—3. Principles of the Screw illuſtrated
4. Endleſs Screw
5. Machine to ſhew the Power of the Screw
6—10. Spring
11. Steelyard (*Referred to as fig.* 6.)
XXXIX. Fig. 1—13. Strength of Materials
XL. Fig. 1—6. Machines for caſting and drawing Lead Pipes
XL. Fig. 1—5. Wedge
6, 7. Weight
8—13. Wheel
(*Theſe three ſubjects are given on the Plate which is numbered* XXX. *&* XXXVI. *The figures correſpond with the reference to Plate* XL.)

MICROSCOPIC OBJECTS.

(*See Plates,* Vol. V. NATURAL HISTORY, ANIMALCULES.)

MIDWIFERY.

(*The Plates intended for the illuſtration of this article have been, for obvious reaſons, purpoſely withheld.*)

MILITARY MANŒUVRES.

I. Firſt Manœuvre
Second Ditto
Third Ditto
Fourth Ditto
II. Fifth Manœuvre
Sixth Ditto
Seventh Ditto
Eighth Ditto
Ninth Ditto

PLATE
III. Tenth Manœuvre
Eleventh Ditto
Twelfth Ditto
Thirteenth Ditto
IV. Fourteenth Manœuvre
Fifteenth Ditto
Sixteenth Ditto
V. Seventeenth Ditto
Eighteenth Ditto
Nineteenth Ditto
VI. Infpection, or Review

MILL WORK.

I. Fig. 1—8.
II. Fig. 9—17.
III. Fig. 18, 19. No. 1, 2. Fig. 20—27.

MINERALOGY.

I. Fig. 1—10. Mining—Bafalt
II. (*See Plates*, Vol. V. NATURAL HISTORY)

MISCELLANY.

I. Fig. 1, 2. Altitude. Sea Gage
3. Altar of Incenfe
4. Burnt Offering
Altars, Pagan (*See* BASSO RELIEVO, *Plate* IV.)
5. Ark of the Covenant
6. Neper's Bones
7. Ancient Arithmetical Characters
Chinefe Mufical Inftruments
8. Ching
9. King
II. Button Making
Glazing Cloth
Tools for cutting Flints, fig. 1—7.
(*Referred to as* GEOLOGY, *Plate* II.)
Smart's Chimney Cleanfing Machine, Fig. 1—6
Cryftallography, Fig. 21—23.
III. Fig. 1—4. Coinage
Copying
1, 2. Rolling Prefs
3. Screw Prefs
III.* Fig. 1, 2. Hawkins's Patent Polygraph.
IV. Defigns for Weaving
Fig. 7. Similar Spots
8. Diffimilar Ditto
9. Dornock
10. Dimity
11. Damafk
(*Thefe figures are referred to as fig.* 1—5.)
V. Fig. 1—8. Diagonal Motion
(*Thefe figures are erroneoufly referred to as fig.* 12—17. *The reader will eafily adjuft the references in the letter-prefs to the figures on the Plate*)
VI. Fig. 18—20. Diagonal Motion, Dividing and Cutting Engine
VII. Fig. 1—6. Diagonal Motion
(*The figures on this Plate are referred to as fig.* 21—26.)

MISCELLANY.

PLATE
VIII. Fig. 1, 2. Diaper Loom
3, 4. Difcharging Prefs
3. Draw Loom
8. Diaper
(*For this figure fee Plate* XII. *fig.* 8.)
Dornock
(*See Plate* XII. *fig.* 6.)
IX. & X. Fig. 1—4. Dramatic Machinery
(X.) Fig. 1. Ditto
X & XI. Fig. 2. Ditto
(XI.) Fig. 1—6. No. 1, 2. Ditto
7, 8. No. 1, 2. Ditto
XII. Draught and Cording of Looms
Fig. 1. Five-leaf Tweel
2. Broken Tweel
3. Eight-leaf Tweel
4. Broken Tweel
5. Striped Dimity
6. Dornock
7. Fancy Dimity
8. Diaper
9. Similar Spot
10. Diffimilar Spot
XII. Fig. 1—8. Mr. Marfhal's Secret Efcutcheon for a Key-hole
(*Thefe figures are referred to as fig.* 2—9.)
9. Self-acting Extinguifhers
10. Hawkins's Ditto
XII. Fig. 1, 2. Drapery
(*See Plate* XX. *fig.* 8, 9.)
1. Painter's Eafel
12. Mr. Mafere's Fire Efcape, fimplified by Forfter
13. Mr. Mafere's Original Sufpenfion
1—3. Indigo Mills
XIII. Fig. 1—7. File Cutting, Tools for
8—10. Filters
11. Filtration
(*See Plate* XXV. *fig.* 3.)
XIV. Fire Place, by Dr. Franklin
Fig. 2. No. 1. Bottom Plate
2. Back Plate
3. Side Plate
3. Ledges
4. Air Box
5. Front Plate
6. No. 6. Top Plate
7. Shutter
8. Regifter
7. Fire Place and Chimney
XIV. Fig. 1—6. Hawkins's Claviole, or Finger-keyed Viol
XV. Flood Gates
Fig. 2. Smeaton's Flood Gate, Elevation
5, 6. Ditto, Plan
7. Farey's Self-acting Flood Gate
8—11. Bramah's Hydroftatic Sluice
XV. Fig. 1—5. Apparatus for reftoring thofe Drowning to Life
Fig. 1. Foundry of Bells
2, 3. Letters or Types
4. Fountain Pen
XVI. Fig. 1. Hooke's Sea Gage, or Bucket
2. Hale's Aqueo-Mercurial Gage
3. Marquetry
(*See another View in* MISCELLANY, *Plate* XXIII. *fig.* 3.)

PLATE

XVI. Fig. 4. Ellicott's Pyrometer
(*This is referred to as in* MISCELLANY, XXIII. *fig.* 4.)
5, 6. Smeaton's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 5, 6.)
7. 8. Ferguſon's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 7, 8.)
9. De Luc's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 9.)
10. Rain Gage
(*Referred to as* MISCELLANY, XXIV. *fig.* 2.)
11. Rain Gage of the Royal Society
(*Referred to as* MISCELLANY, XXIV. *fig.* 3.)

XVII. Gas Lights
Fig. 1—3. Mr. Clegg's Apparatus
4. Dr. Stancliffe's Ditto
5. Mr. B. Cooke's Ditto

XVIII. Fig. 1—18. Gem Engraving

XIX. Fig. 1. Glanders
2, 3. Dr. Wollaſton's Goniometer

XX. Fig. 1. Thorley's Bee-Hive
2—4. White's Ditto
5. Icehouſe
6. Supple's Mortar Mill
7. Horſe
8, 9. Drapery
(*Referred to as* MISCELLANY, *Plate* XII. *fig.* 1, 2.)

XXI. Fig. 1—4. Bramah's Patent Lock
5—8. Rowntree's Ditto

XXII. (*For Bramah's Lock, ſee the preceding Plate. No Plate numbered* XXII.)

XXIII. Fig. 1, 2. Marble Mill
3. Marquetry
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XXIII. & XXIV. } Fig. 5, 6. Pentagraph

(XXIII.) 7, 8. Perch of a Coach
9. Parabolic Fruſtum
10, 11. Conoid
12. Pediment
(*See Plate* BASILIC, ARCHITECTURE, *Plate* XI. & XII.)

(XXIV.) Fig. 1—5. Perſpective Machines
6. Pot-aſh
7. Potaſſium
8. Water Spout

XXV. (*Referred to as Plate* XXIV.)
Fig. 1. Æolus's Harp
2. Crowth
Fig. 3. Filtration
(*Referred to as* MISCELLANY, *Plate* XIII. *fig.* 11.)
4. Marine Trumpet
4. Supple's Mortar Mill
(*See* MISCELLANY, *Plate* XX. *fig.* 6.)
5, 6. Hearing Trumpet
7, 8. Speaking Trumpet
9. Voice
10. Tide Dial
(*Referred to as* DIALLING, *Plate* IV. *fig.* 36.)

MONOGRAMS OF FRENCH ENGRAVERS.

Wendel Reich

PLATE

Jean Duvet or Davet
Noel Garnier
Michael Laſne
Leonard Gualtier
Pierre Woeiriot
Solomon Bernard
Rene Boivin
Jacques Periſin, or Perſinus
Francis Perrier
Pierre Brebiette
Jerome David
Pierre Daret
Stephan du Perac
Antoine Garner
François Cheveau
Jean Couvay
Dominique Bariere
Sebaſtien Vouillemont
Pierre Lombart
Jacques Stella
Nicolas de Larmiſſin

MONOGRAMS OF GERMAN ENGRAVERS.

I. Martin Schoen
Bartholomew Schoen
Sandrart
Hans Schaufflien Senior
Junior
Martin Zagel
Albert Glockenton
Albert Altdorfer
Albert Durer
Hans Holbein
Sigiſmond Holbein
Lucas Cranach
Lucas Kruger
Hans Sebald Beham
Burgkmair, Balding and Breſang
Bartholomew Beham
Gregory Penz
Henry Aldegrever
Hans Broſamer
Auguſtin Hirſhfogel

II. Jacob Binck
Henry Lautenſack
Hans Sebald Lautenſack
Theodore de Brie
Chriſtopher Stimmer
David or Daniel Hopfer
Jerome Hopfer
Tobias Stimmer
Melchior Lorich
Virgil Solis
Chriſtopher Maurer
Chriſtopher Jamnitzer
Joſt or Jodocus Amman
Matthew Greuter
J. F. Greuter
Domenic Cuſtos
Theodore Cruger
Matthias Cruger
Wolfgang Kilian
Lucas Kilian
Bartholomew Kilian

III. Matthew Merian
Chriſtopher Jegher
Wenceſlaus Hollar

Plate

III. John William Baur
Geraud Lairesse
John Ulric Kraus
Andrea Meyer
J. J. Thourneyson
Derick Meyer
Rodolph Meyer
Adrian Van Ostade

MONOGRAMS of the Engravers of the Low-Countries.

I. John Collaert
Jerome Bos or Bosche
Jacob Bosius
Henry Goltzius
Peter Coeck
Walter Van Assen
Lucas Jacobs
Adrian Collaert
Cornelius Metensis
Cornelius Bos
Martin Hemskerck
Peter Breughel
Crispin de Passe
Dietrich Van Staren
Henry Van Cleef
William de Passe
Dirk Volkart Coornhaert
Francis Babylone
Crispin Vanden Broeck
Jerome Cock
Martin Van Cleeve
Magdalen de Passe

II. Simon Passe
Christopher Van Sichem
Hanser John Bol
Cornelius Van Sichem
John Sadeler
Philip Galle
Cornelius Cort
Nicholas de Bruyn
Assuerus Londersel
Jerome Wierix
Abraham de Bruyn
Zachary Dolendo
Paul Moreelse
Karl Van Sichem
James Matham
James de Ghein the elder
John or Hans Saenredam
Bartholomew Dolendo
William Saenredam
Henry Hondius
Abraham Bloemart

III. Jost Hondius
Lucas Vorsterman
William Hondius
David Teniers
Cornelius Blecker
Michael Natalis
Sheltius à Bolswert
Esais Vandevelde
Albert Flamen
Adam à Bolswert
Peter Molyn

MONOGRAMS.

Plate

III. Christian Louis Moyart
Nicholas Berghem
Peter Nolpe
Nicholas Visscher
Peter Quast
John George Van Vliet
Antonio Waterloo
Henry Vander Borcht
Peter Vander Borcht

IV. Theodore Van Kessel
Abraham Genoels
Herman Van Swanevelt
John de Bischop or Episcopius
Lewin Cruyl
Bartholomew Breembergh
John Van Somer
James Vanden Hayden
Robert Van Audenaerde
A. F. Bargas
John Van Hugtenbourg
Peter Van Bleeck
William Buteniveg
John Vanden Bruggen
William de Leeuw
John Von Londerseil
Herman Muller
Peter Serwouters

MONOGRAMS of Italian Engravers.

I. J. Ant. de Bresse
Andrea Mantegna
Nicolas da Modena
Agostino of Venice
Dominico Beccafumi
Jerome Mocetto
Leo Daris or Lion Davin
Marc Antonio
Marc of Ravenna
Julio Bonasone
Dominic Barbiere
Nicholas Beatrice of Lorraine
Lucas Penni
Jean Baptisti Ghisi
George Ghisi of Mantua
Adam Ghisi

II. Boldrini
Martin Rota
Antonio Fantuzzi
J. J. Caraglio
Antonio Salamanca
Gaspar ab Avibus
J. Baptista Cavaleris
Mario Kartaro
Jaques Palma
J. Baptisti Pagi
Franceschini
Cherubino Alberti
Andrea Andreani
Jean Louis Valesio
Annibal Caracci
Antonio Tempesta
Odoard Fialetti
Louis Civoli
Francisco Villamena
Guido Reni

PLATE
III. Alexander Baldili
Joseph Ribera (l'Espagnolet)
Raphael Sciaminosi
Lucas Ciamberlanus
Horace Borgiani
Alexander Algardi
Pietro Testa
Giosesse Marie Metelli
Salvator Rosa
Antonio Francisco Lucini
Remigio Cantagalina
Stefano Della Bella
Jaques Callot
Julio Cesario Venenti
Benedetto Castiglione
Giacomo Ballista Galestrucci
Antonio Maria Zanetti
Dominico Maria Bonavera
Antonio Batestra

MUSIC.

I. Modern Time Table
Characters for Time
II. Graces and Marks of Expression
I. Arpeggio
Ancient Musical Characters of the 14th and 15th Centuries
Arrangement of the Set of Keys on Keyed Instruments
II. Thorough Base, or Accompaniment
III. Thorough Base
IV. Thorough Base
Disallowances in Thorough Base
V. Thorough Base
VI.—VIII. Counterpoint
IX.—XI. Fugues
XII. Fundamental Bases
XIII. Regle de l'Octave, in four parts
XIV.—XVI. Counterpoint, preparation and resolution of Discords
XVII. Double Counterpoint in the Octave
XVIII.—XX. Contrappunto doppio in genere Cromatico
XXI. XXII. Modulation
XXIII. Modulation
Rousseau's regular Modulation in the Key of C major
Kirnberger's two essential Chords
Examples of the first Use of Discords
XXIV. Modulation
XXV. & XXVI. Example of the pathetic Genus, in which are expressed its Successions in the Chromatic Scale ascending and descending
Acciaccature (*One Plate, numbered* XXV.)
XXVII. Fingering on Keyed Instruments
XXVIII. Iteration in Fingering
XXIX. Fingering of Semitonic or Chromatic Divisions
XXX. Shakes
XXXI. & XXXII. Bassoon
Scale of the Bassoon
(*One Plate, numbered* XXXII.)
XXXIII. Air upon Three Notes, by the late M. Rousseau

PLATE
XXXIV.—XLIV. (*It was originally intended that these Plates should comprise selections from the works of Haydn and Mozart, and specimens of the national airs of several countries, viz. Italian, English, Scottish, Irish, Welsh, &c.; but as most or all of these subjects are easily accessible, it has been deemed unnecessary to insert them here at so heavy an additional expence*)
XLV. Original Melodies to the Hymn of Ossian in Temora
XLVI. (*No Plate of this number*)
XLVII. Euclidis Sectio Canonis
XLVIII. Canon in Ogni Modo
Canone Cancherizando
Complete Set of Keys on the Piano Forte

MUSICAL INSTRUMENTS.

I. Ancient Musical Instruments
Fig. 1. Timbrel or Tambour de Basque
2. Citharistria, or female Minstrel
3. Double Lituus
4. Pan playing on the Syrinx
5. A Bacchanal playing on two Flutes of the same Pitch, *tibiæ pares*
6, 7. Antique Theatrical Masques
8. A genuine ancient metalline Lituus
II. Ancient Musical Instruments and Masks
Fig. 1. A Greek Barbiton or Harp
2. Mask of the Hercules furens of Euripides
3. Mask of Thais from Terence's Eunuch
4. A Figure from the Herculaneum Paintings
5, 6. Lyres from Sir W. Hamilton's Vases
III. Ancient Musical Instruments
Fig. 1—3. Group of Musicians performing an Epithalamium, from a Piece of Ancient Sculpture in the Ghigi Palace at Rome
4. The *Tuba*, or Trumpet of the Jubilee
5. Cupid playing on a double Flute, or *tibiæ pares*
6—10. From Egyptian paintings in the Tombs of the kings of Thebes
IV. Ancient Musical Instruments
Fig. 1, 2. The Testudo, or Lyre of Amphion, front and profile
3. Lyre of Terpsichore, in the Picture of that Muse, dug out of Herculaneum
4. Psaltery from the Picture of Erato, dug out of Herculaneum
5. Trigonum, or Triangular Harp
6. Abyssinian Testudo
7. Etruscan Lyre with seven Strings
8. Lyre in an ancient Picture dug out of Herculaneum, on which Chiron is teaching young Achilles to play
9. An Egyptian Systrum
10. An ancient Lyre richly ornamented
V. Indian Musical Instruments
Fig. 1. From an original Indian Painting
2. The Been, an Indian Musical Instrument
VI. Pandean Minstrels in performance at Vauxhall
VII. Welsh Harps
Single Harp

MUSICAL INSTRUMENTS.

PLATE
VII. Ancient Triple Harp
Modern Triple Harp
(*For Guitar, referred to this Plate, see Plates* IX. XIII. & XV.)
VIII. Fig. 1—5. Origin of the Bow
IX. Russian Musical Instruments
Goudok Rebec with three strings
Gelaika
Double Flutes of the Ancients
Rok, or Hunting Horn of Siberia
Rojok
Batalaika, Guitar with two strings
X. Harps
Fig. 1, 2. Harp of Brian Boromh
3. Silver Prize Harp
4. Bell Harp
XI. Fig. 1. English Common Flute
2. German Flute
3. Improved Ditto, with additional keys
4, 5. Hautboys
6. B Fife
7. C Fife
8. English Flageolet
9. Gong
10. Tabour
11. Pipe
XII. Fig. 1, 2. Hunting Horns
3. Serpent
4. French Horn
5. Bugle
6. Sacbut or Trombone
XIII. Fig. 1. Arch Lute
2. Mandoline
3. Mandola
XIV. Fig. 1. Violin
2. Bow
3. Sordine or Mute
4. Violoncello
5. Violino Piccola, or Kit
6. Viol de Gamba of the 16th Century

PLATE
XV. Fig. 1. Viol d'Amour
2. Mandore
3. Spanish Guitar
4. Lute
Chinese Musical Instruments
Ching
King
(*See* MISCELLANY, *Plate* I. *fig.* 8, 9.)

NAVAL ARCHITECTURE.

I. Draught of a Ship of 74 Guns
Sheer Plan
Half-breadth Plan
Body Plan
Perpendicular View of the Stern
II. Disposition of the Frame of a Ship of 74 Guns
III. Frame
IV. Profile of a Ship of 74 Guns, inboard work
V. Plans of a Ship of 74 Guns
Plan of the Gun Deck
Orlop
(*Numbered Plate* VI.)
VI. Plans of the Quarter Deck, Forecastle, and Upper Deck of a Ship of 74 Guns
VII. Fig. 1—10. A Ship of 74 Guns, laying off A
VIII. Fig. 1—12. A Ship of 76 Guns, laying off B
IX. Fig. 1—12. A Ship of 74 Guns, laying off C
X. Fig. 1—8. A Ship of 74 Guns, laying off D
XI. Frigate of 38 Guns
XII. An East Indiaman
XIII. Royal Sovereign Yacht
XIV. Fig. 1—3. Scale of Tons
4—8. Whole Moulding
3—6. Hill's Machine for drawing Ships' Bolts
(*See also* MECHANICS, *Plate* XXII. XXIII.)

PLATES. VOL. IV.

NAVIGATION—WRITING BY CIPHER.

PLATE

NAVAL TACTICS.

I. Fig. 1—3. Convoy
(*See* NAVIGATION, *Plate* III.)

NAVIGATION.

I. & II. Fig. 1. Astrolabe
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 1.)
2. Backstaff
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 2. *There are some inaccuracies in the letters of reference, which the reader will easily correct on inspection*)
Fig. 1. Meridian

PLATE
I & II. Fig. 2, 3. Meridional Parts
(*Referred to as Plate* II. *fig.* 8, 9.)
4—8. Tide
(*Referred to as* GEOGRAPHY, *Plate* I. *fig.* 10—14.)
7. Forestaff
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 3.)
(II.) Fig. 1—3. Hadley's Quadrant, theory of
4. Sinical Quadrant
5, 6. Rhumb Line
7. Variation
8, 9. Ditto
(*Referred to as* ANALYSIS, *Plate* XIII. *fig.* 1, 2.)
8, 9. Meridional Parts
(*See Plate* I. *fig.* 2, 3.)

PLATE
(II.) Fig. 10. Nocturnal
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 6.)
II. & IV. Fig. 1—4. Rudder
5—18. Plain Sailing
II. Fig. 19. Plain Sailing
20—23. Parallel Sailing
24, 25. Mercator's Sailing
26—34. Great Circle Sailing
III. Fig. 1, 2. Traverfe Sailing
3—6. Current Sailing
1—3. Naval Tactics
(*Referred to as* NAVAL TACTICS, *Plate* I. *fig.* 1—3.)
1—5. Trigonometry
(*Referred to as* TRIGONOMETRY, *Plate* III. *fig.* 1—5.)

NOTATION.

Plate of Arithmetical Characters
(*See Mifcellany*, *Plate* I. *fig.* 7.)

OIL MILL.

Smeaton's Oil Mill
1. Plan
2. Elevation

OPTICS.

I. Fig. 1. Aberration
2—4. Angle
5. Burroughs's Machine, Perfpective View
(*Referred to as Plate* II. *fig.* 4, 5.)
13. Altitude
(*See Plate* IV. *fig.* 11.)
II. Fig. 1—3. Parker's Burning Lens
4, 5. Burroughs's Machine
(*See Plate* I. *fig.* 5.)
III. Fig. 1—7. Camera Obfcura
IV. Fig. 1, 2. Catoptric Ciftula
2*—4. Dioptrics
5, 6. Difperfion of Light
8. Focus
(*Referred to as Plate* V. *fig.* 2.)
9. Looking Glafs
(*Referred to as Plate* IX. *fig.* 10.)
10—13. Shadow
14—16. Vifible
17. Vifion
V. & VI. Grinding, &c.
(V.) Fig. 1. Virtual Focus
2. Eye
2. Focus
(*See Plate* IV. *fig.* 8.)
3—7. Grinding Machine
(VI.) Fig. 5—11. Lens
VI. Fig. 1. Helioftata
2. Bed of Hones
3. Horopter
4. Refraction
(*This figure is not numbered*)
VII. Fig. 1—12. Lens

OPTICS.

PLATE
VIII. Fig. 1—12. Lens
IX. Fig. 1—9. Light
10. Looking Glafs
(*See Plate* IV. *fig.* 9.)
X. Fig. 1—3. Magic Lantern
4. Apparent Magnitude
5—11. Micrometer
XI. Micrometer
Fig. 1. Dr. Mafkelyne's
2—4. Troughton's
5. Herfchel's Lamp Micrometer
6. Ditto, the arm enlarged
7, 8. Ditto, the lamp open with the weight W
9. Ditto, the lamp fhut
(*Fig.* 7, 8, 9. *are not numbered on the Plate*)
10. Microfcope
(*The fame as Plate* XII. *fig.* 1.)
XII. Fig. 1—12. Microfcope, Single
XIII. Microfcopes
Fig. 1. Marfhall's
2. Culpepper's
3, 4. Reflecting Microfcope
5. Dr. Smith's Ditto
6—8. Solar Microfcope
(*For* Mirror, *fee Plate* XV.)
XIV. Compound Microfcope
1—4. Adams's
5—11. B. Martin's
XV. Fig. 1. Incidence, Inclination
2—18. Mirror
18. Mufcæ Volitantes
19, 20. Centering Object Glafs
21. Opera Glafs
22. Optical Inequality
23, 24. Parhelion
(*Referred to as Plate* XVII. *fig.* 8, 9.)
Microfcope, (*fee Plate* XVI.)
XVI. Fig. 1—8. Improved Solar Microfcope
(*This is referred to under the article* MICROSCOPE *as* OPTICS, *Plate* XV.)
(*For* Opera Glafs, *fee Plate* XV. *fig.* 21.)
XVII. Fig. 1—8. Optometer, &c.
9. Optic Place
10. Pencil of Rays
(*The reference to fig.* 11. *under* PLACE, *in Optics, fhould be to fig.* 9.)
11, 12. Polyhedron
(*Referred to as fig.* 12, 13)
12. Polemofcope
13. Polyoptrum
(*Referred to as fig.* 14.)
14. Reflection
15. Reflexibility
(*For* Parhelion, *fee Plate* XV. *fig.* 23, 24.)
XVIII. Rainbow, Refraction
Fig. 1—9. Rainbow
10—24. Refraction of Light
XIX. Fig. 1—15. Refrangibility of Light
XX. Fig. 1—4. Shadow
(*See* OPTICS, *Plate* IV. *fig.* 10—13.)
5—7. Vifible
(*See Plate* IV. *fig.* 14—16.)
8. Vifion, theory of
(*See Plate* IV. *fig.* 17.)

PLATE

ORGAN.

I. Fig. 1—13. Detached Parts
II. Interior Profile of an Engliſh Church Organ
III. Fig. 1—5. Organ made by Flight and Robſon for the Earl of Kirkwall
IV. Fig. 6—14. Flight and Robſon's Organ

PAINTING.

I. Fig. 1, 2. Apollo Belvidere
3, 4. Venus de Medicis
II. Fig. 1—8. Diverſities of the Human Face
III. Diverſities of the Human Face
American, Nootka Sound
European
Aſiatic, Paleſtine
Aſiatic, Chineſe
African, Hottentot

PANORAMA.

I. Fig. 1. Fig. 2. No. 1—7. Fig. 3.
II. Fig. 1—5.

PAPER MILL.

I. Fig. 1. Elevation
2. Plan
II. Fig. 1—8. Machinery.

PERSPECTIVE.

I. Fig. 1—8. Anamorphoſis
9. Diſtance of a Vaniſhing Line
10. Point of Ditto
11, 12. Horizontal Line
I. Fig. 1—6. Theory of Perſpective
II. Fig. 1—15. Ditto
III. Fig. 1—16. Ditto
IV. Fig. 1—15. Ditto
V. Fig. 1—6. Ditto
VI. Fig. 1. No. 1—3. Fig. 2. No. 1—4.
VII. Fig. 1. No. 1—3. Fig. 2. No. 1, 2. Fig. 3—6.
VIII. Fig. 1. No. 1—3. Fig. 2—5. Fig. 6. No. 1, 2.
IX. Fig. 1—10. Fig. 11. No. 1—4.
X. Fig. 1. No. 1—6. Fig. 2. No. 1—4. Fig. 3, 4.
XI. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—9. Fig. 10. No. 1, 2. Fig. 11—17.
XII. Fig. 1—6. Fig. 7. No. 1, 2. Fig. 8. No. 1. 2. Fig. 9, 10.

PISÉ BUILDINGS.

(*The Plate thus headed is* AGRICULTURE, *Plate* XXXIII.)

PLANETARY MACHINES.

I. Fig. 1, 2. Cometarium
II. Fig. 1—3. Cometarium, by W. Jones
III. Equation Mechaniſm of a Planet's Orbit
Fig. 1. By Huygens

PLATE
III. Fig. 2. By Mr. Joſeph Prieſtley
3—5. By Rev. W. Pearſon
IV. Fig. 1—6. Equation Mechaniſm of a Planet's Orbit by the Rev. W. Pearſon
V. Firſt Portion of the Orrery for Equated Motions
VI. Fig. 1—3. Janvier's Orrery
VII. Fig. 1—4. Section of the Improved Orrery for Mean Motions
VIII. Perſpective View of the Improved Orrery for Mean Motions, by the Rev. W. Pearſon
IX. Dials graduated for ſhewing different Planetary Phenomena
Fig. 1. Dial for the Equation of the Sun's Centre
2. Ditto, Sun's Declination
3. Ditto, Reduction of the Ecliptic to the Equator
4. Ditto, Moon's Mean Equation of the Centre
5. Ditto, Moon's Mean Heliocentric Latitude
6. Ditto, Moon's Horizontal Parallax only
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(*The laſt figure wants the letter* Z *in the centre, at the interſection of the lines* A E *and* C G)
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(*This figure wants the letter* X *at the bottom*)

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TRIGONOMETRY.

PLATE

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Fig. 1—13. Vocabulary and Machinery

TRIGONOMETRY.

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18—22. Sines
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Fig. 1—42. Lathe, and detached Parts of the Machinery and Inſtruments

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II. Fig. 3. Breaſt Wheel with two Shuttles at Meſſrs. Strutt's Works
4. Ditto improved, at the Royal Armoury Mills
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9. Method of laying on Water

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4—6. Hydraulic Ram
7. Mr. Whitehurſt's Machine for raiſing Water
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9. Machine for raiſing Water by the lateral Communication of a Stream
10. Goodwin's Siphon Machine

PLATE
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13. Greaves's Bucket Machine
14. Chremnitz Fountain
15. Water Bellows
II. Fig. 1—8. Mr. Smeaton's Great Engine for raiſing Water at London Bridge

WATER PRESSURE ENGINE.

Fig. 1—5. Smeaton's Water Preſſure Engine

WEAVING.

I. Mr. Auſtin's Engine Loom Shuttle
II. Fig. 1—4. Looms, &c.

WINDMILL.

I. Fig. 1. Captain Hooper's Horizonal Windmill, Upright Section
2. Ditto, Plan
3—5. Smock Mill
(*This Plate is not numbered.*)
II. Fig. 1. Common Vertical Windmill
2. Smock Mill
3. Internal Mechaniſm of a Poſt Windmill
4. Dutch Windmill
5—7. Parts of the Mechaniſm of a Windmill
(*The reference under* "Rules for modelling the Sails of Windmills," *to fig.* 4, *Plate* II. WINDMILL, *ſhould be to fig.* 4, *Plate* I.)

WINDING ENGINE.

Smeaton's Deſign for a Water Gin, for drawing Coals from the Pits
Fig 1. Plan
2. Elevation of the Frame on the Pit Heap
3, 4. Elevations
5. Plan

WIRE-MILL.

Fig. 1—13. Machinery for Wire-Drawing

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II. Spinning Jenny
III. Shearing Machine
IV. Carding Engine
(*This Plate is not numbered*)
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WORSTED MANUFACTURE.

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2. Supporter for Ditto
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4. Gilpin's Combing Machine
5. Breaking Frame
6. Roving Ditto
7. Spinning Ditto
II. Fig. 1—3. Cartwright's Combing Machine

WRITING BY CIPHER.

I.—III. Characters and Examples

PLATES. VOL. V.

NATURAL HISTORY.

GENERAL SYSTEMATIC ARRANGEMENT OF THE PLATES OF NATURAL HISTORY,

INCLUDING THE THREE KINGDOMS OF NATURE, ACCORDING TO THE SYSTEM OF LINNÆUS.

*** The Arabic Numerals on the Left, denote the Number of the Plates, according to the Syftematic Arrangement of them in the Catalogue.

PLATE

ANIMALS.

CLASS MAMMALIA.

ORDER I. PRIMATES.

GENUS HOMO

1* *Homo Sapiens*, Rational Man
(*See Plates* PAINTING)
Anatomical Structure
(*See Plates* ANATOMY)
2* Varieties of *Homo Sapiens*, Rational Man, according to Climate
α *Americanus*, American Man
β *Europæus*, European
γ *Afiaticus*, Afiatic, (of Paleftine)
(of China)
δ *Afer*, African
(*See* PAINTING, *Plate* III.)

GENUS SIMIA.

1. Lettered MAMMALIA, Order I. Primates. Plate I.
Fig. 1. *Simia Satyrus*, Black Oran Otan, or Outang, *Homo Sylveftris*, var. *Pongo*
2. —— var. *Jocko*, Chefnut Outan, or Outang
3. *Simia Troglodytes*, (Gmel.) *Satyrus indicus* Tulipii. *Chimpanzee*
4. *Simia Lar*, (Gmel.) Long-armed Ape *Simia longimana*, (Schreb.)
5. *Simia Inuus*, Barbary Ape
6. *Simia Sylvanus*, Pigmy Ape

PLATE
1. Fig. 7. *Simia Œdipus*, Red-tailed Ape
8. *Simia Jacchus*, Striated Ape

GENUS LEMUR.

2. Lettered MAMMALIA, Order Primates, Genus Lemur, Plate II.
Fig. 1. *Lemur Podje*, Tarfier Lemur
2. *Lemur ecaudatus*, Taillefs Lemur, or Maucauco
3. *Lemur murinus*, Murine Lemur
4. *Lemur Catta*, Ring-tailed Lemur, or Maucauco
5. *Lemur tardigradus*, Loris Lemur
6. *Lemur volans*, (Linn.) Flying Lemur, or Flying Colugo ?
* GENUS GALEOPITHECUS (*Rufus*) Audebert

GENUS VESPERTILIO.

3. Lettered MAMMALIA, Genus Vefpertilio, Plate III.
Fig. 1. *Vefpertilio Vampyrus*, Vampire Bat
2. *Vefpertilio auritus*, Long-eared Bat
3. *Vefpertilio Spafma*, Cordated Bat
4. *Vefpertilio leporinus*, Peruvian Bat
5. *Vefpertilio Spectrum*, Spectre Bat

ORDER BRUTÆ.

GENUS BRADYPUS.

4. Lettered Clafs MAMMALIA, Order Brutæ, Genus Bradypus
Fig. 1. *Bradypus tridactylus*, Three-toed Sloth
2. *Bradypus didactylus*, Two-toed Sloth

PLATE

GENUS MYRMECOPHAGA.

4. Fig. 3. *Myrmecophaga didactyla*, Two-toed or small Ant-Eater
   4. *Myrmecophaga tetradactyla*, Four-toed Ant-Eater
   5. *Myrmecophaga jubata*, Great Ant-Eater

GENUS ORNITHORINCHUS.

Fig. 6. *Ornithorinchus paradoxus*, Duck-bill
Platypus anatinus, (Shaw,) Duck-billed Platypus

GENUS MANIS.

5. Lettered MAMMALIA, Quadrupeds, Genus Manis
Fig. 1. *Manis pentadactyla*, (Linn.) Five-toed Manis, or Short-tailed Manis
   2. *Manis tetradactyla*, (Schreb.) Four-toed Manis, or Long-tailed Manis

GENUS DASYPUS.

   3. *Dasypus sexcinctus*, Six-banded Armadillo
   4. *Dasypus novemcinctus*, Nine-banded Armadillo
   5. *Dasypus duodecemcinctus*, (Schreb.) Twelve-banded Armadillo
Dasypus unicinctus, (Linn. et Gmel.) Ditto

GENUS RHINOCEROS.

6. Lettered QUADRUPEDS, Mammalia, Order Brutæ, Rhinoceros. Plate.
Fig. 1. *Rhinoceros unicornus*, One-horned Rhinoceros
   2. *Rhinoceros bicornis*, Two-horned Rhinoceros

GENUS SUKOTYRO.

(*A doubtful genus not admitted by Gmelin*)

7. Lettered QUADRUPEDS, Genus Sukotyro
Fig. 1. *Sukotyro Indicus*, Sukotyro
(*From Niewhoff, the Dutch traveller, and Churchill's Collection of Travels*)

GENUS ELEPHAS.

Fig. 2. *Elephas maximus*, Elephant

ORDER FERÆ.

GENUS TRICHECHUS.

8. Lettered QUADRUPEDS, Class Mammalia, Genus Trichechus
Fig. 1. *Trichechus Rosmarus*, Arctic Walrus, or Morse
   2. *Trichechus Manatus*, *β borealis*, Whale-tailed Manatus

GENUS PHOCA.

Fig. 3. *Phoca Ursina*, Ursine Seal
   4. *Phoca groenlandica*, Harp Seal
   5. *Phoca Vitulina*, Sea Calf, or Common Seal
   6. *Phoca maculata*, Kurile or Spotted Seal

PLATE

GENUS CANIS.

9. Lettered QUADRUPEDS, Dogs, Plate II. of Order FERÆ
Fig. 1. *Canis familiaris*, Shepherd's Dog?
   2. *Dingo*, *Australasian*, or New Holland Dog
   3. *Canis familiaris*, var. Pomeranian Dog
Canis β pomeranus, Ditto
   4. *Canis* var. *Sibiricus*, Siberian Dog
   5. Iceland Dog?
   6. var. *Aquaticus minor*, Small Barbet, or Water Dog
   7. var. *Aquaticus*, Great Barbet, or Water Dog

10. Lettered QUADRUPEDS. Plate III. Dogs, Genus XV. Canis
Fig. 1. var. *brevipilis*, King Charles's Dog
   2. Pyrama
   3. var. *Ægyptius*, Naked or Turkish Hound
   4. *fricator*, Pug-dog
   5. Spaniel
   6. Shock
   7. var. *variegatus*, Small Dane
   8. *leoninus*, Lion Dog
   9. *hybridus*, Roquet

11. Lettered QUADRUPEDS, Plate V. Dogs, Genus XV. Canis
Fig. 1. var. *Anglicus*, Mastiff
   2. *Molossus*, Bull-dog
   3. Great Danish, or Harlequin-Dog
   4. Dalmatian Dog

12. Lettered QUADRUPEDS, Dogs, Plate IV. of Order Feræ, Genus XV. Canis
Fig. 1. Old English, or Talbot Hound
   2. Beagle
   3. Harrier
   4. Blood Hound

13. Lettered QUADRUPEDS, Dogs, Plate V. of Order Feræ, Genus XV. Canis
Fig. 1. Stag Hound
   2. Fox Hound
   3. Larger Terrier
   4. Smooth Terrier
   5. Rough Terrier

14. Lettered QUADRUPEDS, Order Feræ, Genus Canis (*No number on the Plate*)
Fig. 1. *Canis Lupus*, Wolf
   2. *Canis Hyæna*, Striped Hyæna
   3. *Canis Mesomelas*, Cape Jackal
   4. *Canis Vulpes*, Common Fox
   5. *Canis Lagopus*. Arctic Fox

GENUS FELIS.

15. Lettered QUADRUPEDS, Plate I. Genus Felis, Lions
Fig. 1. *Felis Leo*, Lion, Lioness, and Young

PLATE

16. Lettered QUADRUPEDS, Plate II. Order 3, Genus Felis
    Fig. 1. *Felis Tigris*, Tiger
    2. *Felis Pardus*, Panther
    3. *Felis Leopardus*, Leopard

17. Lettered QUADRUPEDS, Genus Felis, Tigers, Plate II.
    Fig. 1. *Felis Puma*, Congouar
    2. *Felis Lynx*, Lynx
    3. *Felis Uncia*, Ounce
    4. *Felis Caracal*, Persian Lynx
    5. *Felis Onca*, Jaguar
    6. *Felis jubata*, Hunting Leopard

18. Lettered QUADRUPEDS, Plate III. of Order Feræ, Genus Felis
    Fig. 1. *Felis pardalis*, Ocelot
    2. *Felis Tigrina*, Margay
    3. *Felis Serval*, Serval
    4. *Felis Catus*, *α ferus*, } Wild Cat
    5. *Felis β domesticus*, Tame or domesticated
    6. Tortoiseshell Cat
    7. *Felis γ angorensis*, Angora Cat
    8. *Felis ε cæruleus*, Slate-coloured Cat, (Blue or Chartreux.)

GENUS VIVERRA.

19. Lettered QUADRUPEDS, Order Feræ, Genus Viverra (*No number on the Plate*)
    Fig. 1. *Viverra Zibetha*, Zibet, or Indian Musk Weesel
    2. *Viverra Fossa*, Fossane
    3. *Viverra Ichneumon*, Ichneumon Weesel
    4. *Viverra Nasua*, Brasilian Weesel
    5. *Viverra Civetta*, Civet Weesel, or Civet-Cat, African Musk Weesel

20. Lettered QUADRUPEDS, Order Feræ, Genus Mustela (*No number on the Plate*)
    Fig. 1. *Mustela Lutris*, Sea Otter, Greater Otter
    2. *Mustela Lutra*, Common Otter
    3. *Mustela Foina*, Martin
    4. *Mustela Zibellina*, Sable, or Fisher Weesel

GENUS URSUS.

21. Lettered QUADRUPEDS, Order Feræ, Genus Ursus (*No number on the Plate*)
    Fig. 1. *Ursus Americanus*, American Bear
    2. *Ursus maritimus*, (Gmel.) Polar Bear
    Ursus marinus, (Pallas) U. Albus, Briss.
    3. *Ursus Gulo*, (Schreb.) Glutton
    4. *Ursus Meles*, Badger

GENUS DIDELPHIS.

22. Lettered QUADRUPEDS, Genus Diadelphis, &c. (*No number on the Plate*)
    Fig. 1. *Didelphis Opossum* (Gmel. Schreb.) Virginian Opossum
    Didelphis Virginiana (Shaw) Ditto
    2. *Didelphis petaurus* (Shaw) *volans*, New Holland Flying Opossum
    3. *Didelphis Murina*, Murine Opossum

PLATE

GENUS MACROPUS.

22. Fig. 4. *Macropus Kanguroo*, *a.* male, *b.* female

GENUS TALPA.

23. Lettered QUADRUPEDS, Order Feræ, Genus Talpa, &c. (*No number on the Plate*)
    Fig. 1. *Talpa Capensis*, Cape Mole
    2. *Talpa longicaudata*, Long-tailed Mole
    3. *Talpa Europæa*, European Mole

GENUS SOREX.

Fig. 4. *Sorex minutus*, Minute Shrew
5. *Sorex moschatus*, Musky Shrew
6. *Sorex araneus*, Fetid Shrew

GENUS ERINACEUS.

Fig. 7. *Erinaceus Europæus*, Common Hedgehog
8. *Erinaceus ecaudatus*, Madagascar Hedgehog

ORDER GLIRES.

GENUS HYSTRIX.

24. Lettered QUADRUPEDS, Order Glires, Genus Hystrix (*No number on the Plate*)
    Fig. 1. *Hystrix cristata*, Common or crested Porcupine
    2. *Hystrix prehensilis*, Brasilian Porcupine
    3. *Hystrix dorsata*, Canadian Porcupine (white variety)

GENUS CAVIA.

Fig. 4. *Cavia Aguti*, Long-nosed Cavy
5. *Cavia Magellanica*, Patagonian Cavy
6. *Cavia Paca*, Spotted Cavy

GENUS CASTOR.

25. Lettered QUADRUPEDS, Order Glires, Genus Castor (*No number on the Plate*)
    Fig. 1. *Castor Fiber*, Common Beaver

GENUS MUS.

Fig. 2. *Mus zibethicus*, Musk Rat
3. *Mus decumanus*, Norway Rat
4. *Mus musculus*, Common Mouse
5. *Mus Cricetus*, German Hamster Rat
6. *Mus bursarius*, Purse Rat or Canada Rat
7. *Mus capensis*, Cape Mole-Rat

GENUS ARCTOMYS.

26. Lettered QUADRUPEDS, Order Glires, Genus Arctomys, &c. (*No number on the Plate*)
    Fig. 1. *Arctomys Citillus*, (Schreb.) Variegated Marmot
    2. *Arctomys Empetra*, Canadian Marmot

GENUS SCIURUS.

Fig. 3. *Sciurus Petaurista*, Taquan, or Taguan flying Squirrel, Sailing Squirrel (Penn.)
4. *Sciurus getulus*, Barbary Squirrel
5. *Sciurus vulgaris*, Common Squirrel

PLATE

GENUS MYOXUS.

26. Fig. 6. *Myoxus Mufcardinus* (Schreb.), *Mus avellanarius* (Linn.) Common Dormoufe.—(*Donov. Brit. Quadr.*)

GENUS DIPUS.

27. Lettered QUADRUPEDS, Order Glires, Genus Dipus (*No number on the Plate*)
Fig. 1. *Dipus Jaculus*, Common Jerboa (or Gerboa)
2. *Dipus Sagitta*, Arabian Jerboa
3. *Dipus cafer*, Cape Jerboa

GENUS LEPUS.

Fig. 4. *Lepus timidus*, Common Hare
5. *Lepus alpinus*, (Pallas) Alpine Hare
(*Diftinct from the Alpine Hare of Forfter in Phil. Tranf.* vol. lxii. *and Pennant Quadr., the latter being* Lepus variabilis, *Gmel. Donov. Brit. Quadr.*)

GENUS HYRAX.

Fig. 6. *Hyrax Capenfis*, Cape Hyrax

ORDER PECORA.

GENUS CAMELUS.

28. Lettered QUADRUPEDS, Order Pecora, Genus Camelus (*No number on the Plate*)
Fig. 1. *Camelus Dromedarius*, Arabian Camel or Dromedary
2. *Camelus Bactrianus*, Bactrian Camel

GENUS MOSCHUS.

29. Lettered QUADRUPEDS, Genus Mofchus (*No order or number on the Plate*)
Fig. 1. *Mofchus mofchiferus*, Thibet Mufk
2. *Mofchus pygmæus*, Guinea Mufk
3. *Mofchus javanicus*, Java Mufk

GENUS CERVUS.

4. *Cervus Alces*, Elk

30. Lettered QUADRUPEDS, Genus Cervus (*No order or number on the Plate*)
Fig. 1. *Cervus Tarandus*, Rein Deer
2. *Cervus Elaphas*, Stag or Hart
3. *Cervus Axis*, Spotted Axis

GENUS CAMELOPARDALIS.

4. *Camelopardalis Giraffa*, Giraff, or Camelopard

GENUS ANTILOPE.

31. Lettered QUADRUPEDS, Genus Antilope (*No order or number on the Plate*)
Fig. 1. *Antilope Rupicapra*, Chamois
2. *Antilope Cervicapra*, Antelope
3. *Antilope pygmæa*, Royal Antelope, or Pigmy Antelope
4. *Antilope Grimmia*, Guinea Antelope
5. *Antilope Gnu*, Gnou

PLATE

GENUS CAPRA.

32. Lettered QUADRUPEDS, Genus Capra (*No order or number on the Plate*)
Fig. 1. *Capra Ibex*, Ibex Goat
2. *Capra Ægagrus*, Mountain-cultivated Goat (*Donov. Brit. Quadr.*)
3, 4. *Capra Ægagrus*, Domefticated Goat (*Donov. Brit. Quadr.*)
5. *Capra Ægagrus*, (var. *membrica* δ) Syrian Goat
6. *Capra Ægagrus*, (var. *angorenfis* γ) Angora Goat

GENUS ARIES.

33. Lettered QUADRUPEDS, Ovis, Aries (*No order or number on the Plate*)
Aries, Ovis, Common Sheep
var. South Down Polled Sheep of the improved breeds. From the Stock of the late Duke of Bedford, Woburn

34. Lettered QUADRUPEDS, Genus Ovis, Sheep (*No order or number on the Plate*)
Aries, Ovis, Common Sheep
Fig. 1. var. Norfolk Breed
2. Hereford Breed

GENUS BOS.

35. Lettered QUADRUPEDS, Bos, Taurus (*No order or number on the Plate*)
Bos, Taurus, Ox
Fig. 1. var. Scottifh Wild Ox, the Bull
2. The Cow and Calf

36. Lettered QUADRUPEDS, Bos, Taurus (*No order or number on the Plate*)
Bos, Taurus, Common Ox
var. Long-horned or Lancafhire Breed

ORDER BELLUÆ.

GENUS EQUUS.

37. Lettered HORSES, Plate I. (*No order on the Plate*)
Equus Caballus, Horfe
Fig. 1. var. Shetland Poney
2. var. Englifh Cart Horfe

38. Lettered QUADRUPEDS, Order VI. Belluæ, Genus 33, Equus (*No number on the Plate*)
Equus Caballus, Horfe
var. Suffolk Agricultural Punch Horfe
var. Suffolk Mare and Foal, from the Stock of the late Duke of Bedford

39. Lettered QUADRUPEDS, Genus Equus (*No order or number on the Plate*)
Equus Caballus, Horfe
Fig. 1. var. Race Horfe, Royalift
2. var. The Hunter Skylark

PLATE

GENUS HIPPOPOTAMUS.

40. Lettered QUADRUPEDS, Genus Hippopotamus (*No number on the Plate*)

Fig. 1. *Hippopotamus amphibius*, Hipppotamus

GENUS TAPIR.

Fig. 2. *Tapir Americanus*, Tapir

GENUS SUS.

41. Lettered QUADRUPEDS, Genus Sus (*No number on the Plate*)

Fig. 1. *Sus Scrofa*, (*ferus* α) Wild Hog
2. *Sus Babyruſſa*, Babyrouſa
3. *Sus Æthiopicus*, Æthiopian Hog
4, 5. *Sus Scrofa*, (*domeſticus* β) Domeſticated Hog

ORDER CETE.

GENUS MONODON.

42. Lettered MAMMALIA, Order Cete, Genus Monodon, &c.
(*No number on the Plate*)

Fig. 1. *Monodon Monoceros*, Narwhal, or Narval (*Sometimes* Sea Unicorn, *or* One-toothed Monodon, *ſo rarely having two teeth, that only a ſingle example of the kind is known. Donov. Muſ. Vide Donov. Brit. Quadrupeds*)

GENUS BALÆNA.

Fig. 2. *Balæna Myſtecetus*, Great Myſtecete, or Common Whale
3. *Balæna Boops*, Pike-headed Whale

GENUS PHYSETER.

43. Lettered MAMMALIA, Order Cete, Genus Phyſeter (*No number on the Plate*)

Fig. 1. *Phyſeter macrocephalus*, Blunt-headed Cachalot
2. *Phyſeter*, var. *gibboſus*, (Schreb.) Gibbous Cachalot

GENUS DELPHINUS.

Fig. 3. *Delphinus Phocæna*, Porpoiſe
4. *Delphinus Delphis*, Dolphin

ORNITHOLOGY.

CLASS II. *AVES*.

ORDER ACCIPITRES.

GENUS VULTUR.

44. Lettered Diviſion I. LAND BIRDS, Plate II.

Fig. 1. *Vultur Gryphus*, Megallanic Condur, or Condor

GENUS FALCO.

2. *Falco Chryſaëtos*, Golden Eagle
3. *Falco gentilis*, Falcon Gentil
4. *Falco ſubbuteo*, Hobby

PLATE

GENUS STRIX.

44. 5. *Strix Bubo*, Great Horned Owl, or Eagle Owl
6. *Strix flammea*, Common Owl

ORDER PICÆ.

GENUS PSITTACUS.

45. Lettered Diviſion I. LAND BIRDS, Plate I. Order Picæ

Fig. 1. *Pſittacus Macao*, Red and blue Maccaw
2. *Pſittaccus Alexandri*, Alexandrine Parrot
3. *Pſittacus Æſtivus*, var. Amazon Parrot
4. *Pſittacus garrulus*, var. Ceram Lory
5. *Pſittacus Moluccenſis*, Great red-creſted Cockatoo
6. *Pſittacus Bankſii*, Bankſian Cockatoo
7. *Pſittacus pullarius*, Ethiopian Parrot

GENUS RAMPHASTOS.

46. Lettered Diviſion I. LAND BIRDS, Plate II. Picæ

Fig. 1. *Ramphaſtos piſcivorus*, Braſilian Toucan
2. *Ramphaſtos Aracari*, Green Toucan, or Aracari

GENUS BUCEROS.

Fig. 3. *Buceros Rhinoceros*, Rhinoceros Horn-bill

GENUS BUPHAGA.

Fig. 4. *Buphaga Africana*, African Beef-eater

GENUS CROTOPHAGA.

Fig. 5. *Crotophaga Ani*, (*major*) greater Ani Bird

GENUS GLAUCOPIS.

Fig. 6. *Glaucopis cinereus*, Cinereous Wattle Bird

GENUS CORVUS.

47. Lettered Diviſion I. LAND BIRDS, Picæ, Plate III.

Fig. 1. *Corvus Corax*, Raven
2. *Corvus Pica*, Magpie
3. *Corvus Caryocatactes*, Nut-cracker
4. *Corvus glandarius*, Jay
5. *Corvus criſtatus*, Creſted Jay

GENUS CORACIAS.

Fig. 6. *Coracias Garrulus*, Roller,(Garrulous Roller, *Donov. Brit. Birds*)

GENUS ORIOLUS.

48. Lettered Diviſion I. LAND BIRDS, Order II. Picæ, Plate IV.

Fig. 1. *Oriolus criſtatus*, Creſted Oriole
2. *Oriolus Baltimorus*, Baltimore Oriole
3. *Oriolus Perſicus*, Black and Yellow Oriole
4. Neſt of ditto

GENUS CUCULUS.

Fig. 5. *Cuculus canorus*, Common Cuckow

PLATE

48. Fig. 6. *Cuculus cupreus*, Coppery Cuckow
7. *Cuculus indicator*, Honey-guide

GENUS GRACULA.

49. Lettered Divifion I. LAND BIRDS, Order II. Picæ, Plate V.

Fig. 1. *Gracula Quifcala*, Purple Grakle
2. *Gracula calva*, Bald Grakle
3. *Gracula Saularis*, Dial Grakle

GENUS PARADISEA.

Fig. 4. *Paradifea Regia*, King Bird of Paradife
5. *Paradifea Apoda*, Greater Bird of Paradife
6. *Paradifea aurea*, Golden Bird of Paradife

GENUS TODUS.

Fig. 7. *Todus macrorhynchos*, Great-billed Tody (*This genus fhould be placed after Sitta.*)

GENUS TROGON.

50. Lettered Divifion I. LAND BIRDS, Order II. Picæ, Plate VI.

Fig. 1. *Trogon Curucui*, Red-bellied Trogon

GENUS BUCCO.

Fig. 2. *Bucco Lathami*, Buff-faced Barbet
3. *Bucco Cayanenfis*, Cayenne Barbet

GENUS YUNX.

Fig. 4. *Yunx Torquilla*, Wryneck

GENUS PICUS.

Fig. 5. *Picus pileatus*, Pileated Woodpecker
6. *Picus Carolinus*, var. Caroline Woodpecker

GENUS SITTA.

Fig. 7. *Sitta Europæa*, European Nuthatch

GENUS ALCEDO.

51. Lettered Divifion I. LAND BIRDS, Order II. Picæ, Plate VII.

Fig. 1. *Alcedo criftata*, Crefted King's Fifher
2. *Alcedo venerata*, Venerated King's Fifher
3. *Alcedo Alcyon*, Belted King's Fifher
4. *Alcedo facra*, Sacred King's Fifher

GENUS GALBULA.

Fig. 5. *Galbula paradifea*, Lath. (*Alcedo paradifea*, Gmel.) Long-tailed Jacamar, Paradife Jacamar
6. *Galbula viridis*, Lath. (*Alcedo Galbula*, Gmel.) Green Jacamar

GENUS MEROPS.

52. Lettered Divifion I. LAND BIRDS, Order II. Picæ

Fig. 1. *Merops carunculatus*, Wattled Bee-eater
2. *Merops Novæ Seelandiæ*, New Zealand Bee-eater

GENUS UPUPA.

Fig. 3. *Upupa Pomerops*, Cape Hoopoe

PLATE

52. Fig. 4. *Upupa Epops*, Common Hoopoe
5. *Upupa Erythrorynchos*, Red-billed Hoopoe

GENUS CERTHIA.

53. Lettered Divifion I. LAND BIRDS, Order Picæ, Plate IX.

Fig. 1. *Certhia pacifica*, Great hooked-billed Creeper
2. *Certhia obfcura*, Hook-billed Green Creeper
3. *Certhia coccinea*, Hook-billed Red Creeper
4. *Certhia cærulea*, Blue Creeper

GENUS TROCHILUS.

Fig. 5. *Trochilus pelta*, Topaz Humming Bird
6. *Trochilus furcatus*, Leffer-forked Humming Bird
7. *Trochilus puniceus*, Crefted Humming Bird
8. *Trochilus ornatus*, Tufted-necked Humming Bird
9. *Trochilus minimus*, Leaft Humming Bird

ORDER ANSERES.

GENUS ANAS.

54. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate I.

Fig. 1. *Anas atrata*, Black Swan
2. *Anas Olor*, Tame Swan
3. *Anas cygnoides*, Chinefe Goofe
4. *Anas gambenfis*, Spur-winged Goofe

55. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate II.

Fig. 1. *Anas Erythropterus*, Bernacle Goofe
2. *Anas Canadenfis*, Canada Goofe
3. *Anas fpectabilis*, Grey-headed Duck
4. *Anas Mofchata*, Mufcovy Duck

56. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate V.

Fig. 1. *Anas tardona*, Sheldrake, or Shieldrake
2. *Anas clypeata*, Shoveler
3. *Anas crecca*, Teal
4. *Anas curvirofira*, Hooked-billed Duck, (var. *Donov. Brit. Birds*)
5. *Anas Bofchas*, Mallard
6. *Anas Galericulata*, Mandarine Drake

GENUS MERGUS.

57. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate IV.

Fig. 1. *Mergus Merganfer*, Goofander
2. *Mergus cucullatus*, Crefted Merganfer
3. *Mergus albellus*, Smew, or Nun (White Smew, *Donov. Brit. Birds*)

GENUS ALCA.

Fig. 4. *Alca antiqua*, Ancient Auk
5. *Alca cirrata*, Tufted Auk

GENUS APTENODYTA.

Fig. 6. *Aptenodyta patachonica*, Patagonian Penguin

PLATE

57. Fig. 7. *Aptenodyta papua*, Papuan Penguin
8. *Aptenodyta minor*, Little Penguin

GENUS PROCELLARIA.

58. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate VI. *Obf.* with fix Birds.

Fig. 1. *Procellaria capenfis*, Pintado Petrel
2. *Procellaria fuliginofa*, Sooty Petrel
3. *Procellaria pelagica*, Stormy Petrel
4. *Procellaria gigantea*, Gigantic Petrel

GENUS DIOMEDIA.

Fig. 5. *Diomedia fpadicea*, Chocolate Albatrofs
6. *Diomedia chlororynchos*, Yellow-nofed Albatrofs

GENUS PELECANUS.

59. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate VI. *Obf.* This is the Plate VI. containing five Birds, both being lettered and numbered alike

Fig. 1. *Pelceanus Erythrorynchos*, Rough-billed Pelican
2. *Pelecanus Sula*, Booby
3. *Pelecanus Aquilus*, Frigate

GENUS PLOTUS.

Fig. 4. *Plotus punctatus*, Spotted Shag
5. *Plotus melanogafter*, Black-bellied Darter

GENUS PHÆTON.

60. Lettered Divifion II. WATER BIRDS, Order III. Anferes, Plate VII.

Fig. 1. *Phæton æthereus*, Common Tropic Bird
2. *Phæton phœnicurus*, Red-tailed T. B.

GENUS COLYMBUS.

Fig. 3. *Colymbus marmoratus*, Marbled Guillemot
4. *Colymbus arcticus*, Black-throated Diver
5. *Colymbus Sinenfis*, Chinefe Diver
6. *Colymbus cornutus*, Horned Grebe

GENUS LARUS.

61. Lettered Divifion II. WATER BIRDS, Order Anferes, Plate IX.

Fig. 1. *Larus parafiticus*, Arctic Gull
2. *Larus eburneus*, Ivory Gull
3. *Larus marinus*, Black-backed Gull

GENUS STERNA.

Fig. 4. *Sterna cafpia*, (*Sterna Tfchegrava*, Lepechin) Cafpian Tern
5. *Sterna ftolida*, Noddy

GENUS RYNCHOPS.

Fig. 6. *Rynchops nigra*, Black Skimmer

ORDER GRALLÆ.

GENUS PHŒNICOPTERUS.

62. Lettered Order Grallæ, Plate I.

Fig. 1. *Phœnicopterus ruber*, Red Flamingo

PLATE

GENUS PLATALEA.

62. Fig. 2. *Platalea ajaja*, Rofeate Spoonbill

GENUS PALAMEDEA.

Fig. 3. *Palamedea cornuta*, Horned Screamer

GENUS MYCTERIA.

Fig. 4. *Mycteria Novæ Hollandia*, New Holland Jabiru

GENUS CANCROMA.

63. Lettered Order Grallæ, Plate II.

Fig. 1. *Cancroma Cochlearia*, Crefted Boatbill

GENUS SCOPUS.

Fig. 2. *Scopus Umbretta*, Tufted Umbre

GENUS ARDEA.

Fig. 3. *Ardea Pavonina*, Crowned Crane
4. *Ardea Antigone*, Indian Crane

64. Lettered Order Grallæ, Plate III.

Fig. 1. *Ardea Ciconia*, White Stork
2. *Ardea Dubia*, Gigantic Heron
3. *Ardea exilis*, Minute Bittern
4. *Ardea Egretta*, Great Egret
5. *Ardea Tigrina*, Tiger Bittern

GENUS TANTALUS.

65. Lettered Order Grallæ, Plate IV.

Fig. 1. *Tantalus Loculator*, Wood Ibis
2. *Tantalus melanopis*, Black-faced Ibis
3. *Tantalus calvus*, Bald Ibis

GENUS CORRIRA.

Fig. 4. *Corrira italica*, Italian Courier

GENUS SCOLOPAX.

Fig. 5. *Scolopax leucocephala*, White Headed Curlew
6. *Scolopax phæpus*, Whimbrel

66. Lettered Order Grallæ, Plate V.

Fig. 1. *Scolopax lapponica*, Red or Lapland Godwit
2. *Scolopax candida*, White red Shank
3. *Scolopax capenfis*, Cape Snipe
4. *Scolopax rufticola*, Wood Cock
5. *Scolopax major*, Great Snipe
6. *Scolopax fedoa*, Great or American Godwit
7. *Scolopax limofa*, Leffer Godwit

GENUS TRINGA.

67. Lettered Order Grallæ, Plate V.

Fig. 1. *Tringa leucoptera*, White-winged Sandpiper
2, 3. *Tringa pugnax*, Ruff and Reeve
4. *Tringa lobata*, Grey Phalarope

GENUS CHARADRIUS.

Fig. 5. *Charadrius apricarius*, Alwagrim
6. *Charadrius Himantopus*, Long-legged Plover
7. *Charadrius fpinofus*, Spur-winged Plover

PLATE

GENUS RECURVIROSTRA.

68. Lettered Order Grallæ, Plate VII.

Fig. 1. *Recurviroſtra americana*, American Avocet

GENUS HÆMATOPUS.

Fig. 2. *Hæmatopus oſtralegus*, Oyſter catcher (Pied Oyſter Catcher, *Donov. Brit. Birds.*)

GENUS GLAREOLA.

Fig. 3. *Glareola auſtriaca*, Auſtrian Pratincole

GENUS FULICA.

Fig. 4. *Fulica Porphyrio*, Purple Gallinule
5. *Fulica criſtata*, Creſted Coot

GENUS VAGINALIS.

69. Lettered Order Grallæ, Plate VIII.

Fig. 1. *Vaginalis alba*, White Sheath-bill

GENUS PARRA.

Fig. 2. *Parra Jacana*, Cheſnut Jacana
3. *Parra ſinenſis*, China Jacana

GENUS RALLUS.

Fig. 4. *Rallus crex*, Land Rail
5. *Rallus variegatus*, Variegated Rail

GENUS PSOPHIA.

Fig. 6. *Pſophia crepitans*, Gold-breaſted Trumpeter

ORDER GALLINÆ.

GENUS OTIS.

70. Lettered Diviſion I. LAND BIRDS, Order 5. Gallinæ, Plate I.

Fig. 1, 2. *Otis Tarda*, Buſtard—male 1. female 2.

.GENUS STRUTHIO.

Fig. 3. *Struthio Rhea*, American Oſtrich
4. *Struthio caſuarius*, Caſſowary, or Emeu
5. *Struthio Novæ-Hollandiæ*, New Holland Caſſowary

GENUS DIDUS.

71. Lettered Diviſion II. LAND BIRDS, Order 5. Gallinæ.

Fig. 1. *Didus Ineptus*, Hooded Dodo

GENUS STRUTHIO.

Fig. 2, 3. *Struthio Camelus*, Oſtrich — male 2. female 3.

GENUS PAVO.

72. Lettered Diviſion I. LAND BIRDS, Order Gallinæ, Plate III.

Fig. 1. *Pavo criſtatus*, Creſted Peacock
2. *Pavo criſtatus* (var. *varius*), Variegated or Pied Peacock
3. *Pavo criſtatus* (var. *albus*), White Peacock
4. *Pavo bicalcaratus*, Iris peacock

PLATE

GENUS MELEAGRIS.

73. Lettered Diviſion II. LAND BIRDS, Order 5. Gallinæ, Plate IV.

Fig. 1. *Meleagris Gallopavo*, American or Wild Turkey

GENUS PENELOPE.

Fig. 2. *Penelope criſtata*, Guan

GENUS CRAX.

Fig. 3, 4. *Crax Alector*, Curaſſow—male 3. female 4.
5. *Crax Pauxi*, Cuſhew

GENUS PHASIANUS.

74. Lettered Diviſion II. LAND BIRDS, Order Gallinæ, Plate V.

Fig. 1, 2. *Phaſianus Gallus*, Wild Cock—male 1. female 2.
3. Ditto, var. *domeſticus*, domeſticated varieties, Rumpleſs Cock
4. Ditto, Silky Cock
5, 6. Hamburgh Cock—male 5. female 6.
7, 8. Game Cock—male 7. female 8.
9, 10. *puſillus* 9, Bantam Cock — male 9. female 10.

75. Lettered Diviſion II. LAND BIRDS, Order Gallinæ, Plate VI.

Fig. 11, 12. *Phaſianus Gallus*, var. *domeſticus*, varieties, Malay Cock—male 11. female 12.
13, 14. Ditto, Dorking Cock — male 13. female 14.
15, 16. Ditto, Frizzled Cock — male 15. female 16.

76. Lettered Diviſion III. LAND BIRDS, Order Gallinæ, Plate VII.

Fig. 1. *Phaſianus Colchicus*, Common Pheaſant
2. *Phaſianus pictus*, Gold Pheaſant
3. *Phaſianus Nycthemerus*, Silver Pheaſant
4. *Phaſianus Argus*, Argus Pheaſant

GENUS NUMIDIA.

77. Lettered Diviſion I. LAND BIRDS, Order Gallinæ, Plate VIII.

Fig. 1. *Numidia meleagris*, Guinea Hen or Pintado
2. *Numidia criſtata*, Creſted Pintado

GENUS TETRAO.

Fig. 3. *Tetrao umbellus*, Ruffed or Ruff-necked Grous
4. *Tetrao alchata*, Pin-tailed Grous
5. *Tetrao Canadenſis*, Spotted Grous
6. *Tetrao paradoxus*, Heteroclitus Grous, or Paradoxical Grous

78. Lettered Diviſion II. LAND BIRDS, Order Gallinæ, Plate IX.

Fig. 1. *Tetrao perdix*, Common Partridge
2. *Tetra ferrugineus*, Hackled Partridge

PLATE

78. Fig. 3. *Tetrao gibraltaricus*, Gibraltar three-toed Quail
4. *Tetrao marylandus*, Maryland Quail
5. *Tetrao viridis*, Green Quail—male
6. *Tetrao major*, Great Tinamou
7. *Tetrao variegatus*, Variegated Tinamou

ORDER PASSERES.

GENUS COLUMBA.

79. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate II.
Fig. 1. *Columba chalcoptera*, Bronze-winged Pigeon
2. *Columba erythroptera*, Garnet-winged Pigeon
3. *Columba macroura*, Great-tailed Pigeon
4. *Columba nicobarica*, Nicobar Pigeon
5. *Columba curviroftra*, Hook-billed Pigeon
6. *Columba capenfis*, Cape Turtle, or Cape Pigeon
7. *Columba coronata*, Great-crowned Pigeon

GENUS ALAUDA.

80. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate LXXX.
Fig. 1. *Alauda capenfis*, Cape Lark

GENUS STURNUS.

Fig. 2. *Sturnus militaris*, Military Starling
3. *Sturnus undata*, Undulated Starling

81. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate III.
Fig. 1. *Turdus Orpheus*, Mocking Thrufh
2. *Turdus Rex*, King Thrufh
3. *Turdus perfpicillatus*, Spectacle Thrufh
4. *Turdus craffiroftris*, Thick-billed Thrufh
5. *Turdus cyanurus*, Blue-tailed Thrufh
6. *Turdus longiroftris*, Long-billed Thrufh

GENUS AMPELIS.

82. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate IV.
Fig. 1. *Ampelis carunculata*, Carunculated Chatterer
2. *Ampelis cotinga*, Purple-breafted Chatterer
3. *Ampelis Pompadora*, Pompadour Chatterer
4. *Ampelis carnifex*, Red Chatterer

GENUS COLIUS.

Fig. 5. *Colius capenfis*, Cape Coly
6. *Colius erythropus*, White-backed Coly

GENUS LOXIA.

83. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate V.
Fig. 1. *Loxia lineola*, Lineated Grofbeak
2. *Loxia cucullata*, Crefted Dominican Grofbeak
3. *Loxia philippina*, Philippine Grofbeak
4. The pendulous Neft of the Philippine Grofbeak
5. *Loxia Cardinalis*, Cardinal Grofbeak
6. *Loxia aftrild*, Waxen-billed Grofbeak
7. *Loxia flabellifera*, Fan-tailed Grofbeak

PLATE

GENUS EMBERIZA.

84. Lettered Divifion I. LAND BIRDS, Order Pafferes, Plate VI.
Fig. 1. *Emberiza Paradifea*, Whidaw Bird
2. *Emberiza ciris*, Painted Bunting
3. *Emberiza Regia*, Shaft-tailed Bunting
4. *Emberiza provincialis*, Muftachoe Bunting
5. *Emberiza americana*, Black-throated Bunting
6. *Emberiza hortulana*, Ortolan Bunting

GENUS TANAGRA.

85. Lettered Divifion I. LAND BIRDS, Order 3. Pafferes, Plate X.
Fig. 1. *Tanagra Tatao*, Paradife Tanager
2. *Tanagra capitalis*, Capital Tanager
3. *Tanagra Jacapa*, Red-breafted Tanager

GENUS FRINGILLA.

Fig. 4. *Fringilla ignita*, Fire Finch
5. *Fringilla flammea*, Crimfon-crowned Finch
6. *Fringilla bengalus*, Blue-bellied Finch
7. *Fringilla Pfittacus*, Parrot Finch

GENUS PHYTOTOMA.

Fig. 8. *Phytotoma rara* (*Molina, Hift. Nat. Chili*) Chili Phytotoma

GENUS MUSCICAPA.

86. Lettered Order Pafferes, Plate VIII.
Fig. 1. *Mufcicapa bicolor*, Black and White Flycatcher
2. *Mufcicapa barbata*, Whifkered Flycatcher
3. *Mufcicapa tyrannus*, Forked-tailed Flycatcher
4. *Mufcicapa malachura*, Soft-tailed Flycatcher
5. *Mufcicapa flabellifera*, Fan-tailed Flycatcher

GENUS MOTACILLA.

Fig. 6. *Motacilla cyanea*, Superb Wheat-ear
7. *Motacilla Madrafpatenfis*, Pied Wagtail (Madras Pied Wagtail)

GENUS MOTACILLA.

87. Lettered Order Pafferes, Plate IX.
Fig. 1. *Motacilla pileata*, Black-headed Warbler
2. *Motacilla fpinicauda*, Thorn-tailed Warbler
3. *Motacilla fuccica*, Blue-throated Warbler

GENUS PIPRA.

Fig. 4. *Pipra rupicola*, Rock Manakin
5. *Pipra ftriata*, Striped-headed Manakin
6. *Pipra leucocephala*, White-capped Manakin
7. *Pipra punctata*, Speckled Manakin

GENUS PARUS.

88. Lettered Order Pafferes, Plate XX.
Fig. 1. *Parus macrocephalus*, Great-headed Titmoufe
2. *Parus criftatus*, Crefted Titmoufe

PLATE

GENUS HIRUNDO.

88. Fig. 4. *Hirundo efculenta*, Efculent Swallow
5. The efculent Neft of this Swallow
6. *Hirundo tahitica*, Otaheite Swallow
7. *Hirundo pelafgia*, Aculeated Swallow
3. *Hirundo indica*, Rufous-headed Swallow

GENUS CAPRIMULGUS.

80. Lettered Divifion LAND BIRDS, Order Pafferes, Plate LXXX.
Fig. 4. *Caprimulgus longipennis*, Leona Goatfucker
5. *Caprimulgus grandis*, Great Goatfucker

ELEMENTARY PLATES

TO ILLUSTRATE

THE CLASSIFICATION OF BIRDS.

Characters of the Feet in the different Orders and Genera.

ACCIPITRES.

Feet formed for affifting the Mandibles in feizing and tearing the prey, being armed with ftrong talons.

89. Lettered ORNITHOLOGY, Elementary Plate I.
The Feet in *Falco* (*Falco Chryfaetos*, Golden Eagle); and Eagles, Falcons, Hawks
The Feet in *Strix* (*Strix flammea*, White Owl); ftridula, brachyotos, pafferina
(*The Shrikes belong to this order*)

PICÆ.

* *Feet formed for Perching.*

90. Lettered Plate IV.
The Feet in *Sitta* (Nuthatch) European Nuthatch

92. Lettered Plate II.
The feet in *Corvus* (Crow) Common Crow
Paradifea (Bird of Paradife)

The fame ftructure prevails in the feet of the genera Buphaga, Oriolus, Coracias, Upupa, Certhia, Trochilus, &c.

** *Feet formed for Climbing.*

90. Lettered Elementary Plate IV.
The Feet of *Picus* (*P. Martius*, Great Black Woodpecker; *P. Viridis*, Green Woodpecker)
The Feet of *Mufophagus* (Mufophage)

This ftructure is well exemplified in Pfittacus (Parrot), and Cuculus (Cuckow), which are familiar examples; and occurs in the genera Scythrops, Ramphaftos, Trogon, Crotophaga, Galbula, Yunx, and Bucco.

PLATE

*** *Feet formed for Walking.*

90. Lettered Elementary Plate IV.
The Foot of *Alcedo* (King's-fifher)

The other genera of Picæ, which have the feet formed for walking, are Momotus, Buceros, Merops, and Todus.

ANSERES.

Feet formed for Swimming.

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Anas* (Goofe, Duck)
Alca (Auk)
Aptenodyta (Penguin)
Pelecanus (Pelican), two fpecies
Colymbus (Grebe), three fpecies
Larus (Gull)

90. Lettered ORNITHOLOGY, Elementary Plate IV.
Feet in the genus *Sterna* (Tern)

GRALLÆ.

Feet formed for Wading.

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Phœnicopterus* (Flamingo)

89. Lettered ORNITHOLOGY, Elementary Plate I.
Feet in the genus *Platalea* (Spoonbill) *P. ajaja*

90 & 92. Lettered ORNITHOLOGY, Elementary Plate IV. and II.
Feet in the genus *Ardea* (Heron)

89. Lettered ORNITHOLOGY, Elementary Plate I.
Feet in the genus *Ardea cinerea* (Grey Heron)

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Recurvirofira*, (Avocet)

89. Lettered ORNITHOLOGY, Elementary Plate I.
Feet in the genus *Tantalus* (Ibis) *T. igneus*, Bay Ibis

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Tringa* (Phalarope) *T. lobata*, Scallop-toed Tringa

89. Lettered ORNITHOLOGY, Elementary Plate I.
Feet in the genus *Charadrius* (Plover, Long-legged P.)
Hæmatopus (Oyfter Catcher)
Glareola (Pratincole) *P. auftriaca*

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Fulica* (Gallinule)
Viginalis (Sheathbill)

90. Lettered ORNITHOLOGY, Elementary Plate IV.
Feet in the genus *Rallus* (Rail)

PLATE

91. Lettered ORNITHOLOGY, Elementary Plate III.
Feet in the genus *Rallus* (Rallus gallinule)

90. Lettered ORNITHOLOGY, Elementary Plate IV.
Feet in the genus *Parra* (Jacana), two fpecies

GALLINÆ.

Form of the Feet.

92. Lettered ORNITHOLOGY, Elementary Plate II.
In the genus *Otis* (Buftard)
Struthio (Oftrich) *S. camelus*, Common or Black Oftrich
Struthio cafuarius, Caffowary
Cereopfis (Cereops)
Pavo (Peacock) Common P.
Phafianus (Pheafant) Common P.
Menura (Menura)

89. Lettered ORNITHOLOGY, Elementary Plate I.
In the genus *Tetrao* (Grous), *T. Urogallus*, Great Grous. *T. lagopus*, Ptarmigan. *T. tetrix*, Black Game

PASSERES.

Structure of the Feet.

89. Lettered ORNITHOLOGY, Elementary Plate I.
In the genus *Colius* (Coly)

90. Lettered ORNITHOLOGY, Elementary Plate IV.
In the genus *Alauda* (Lark), *A. arvenfis*, Sky-lark. *A. obfcura*, Dufky Lark
Pipra (Manakin)

92. Lettered ORNITHOLOGY, Elementary Plate II.
In the genus *Parus* (Titmoufe)

90. Lettered ORNITHOLOGY, Elementary, Plate IV.
In the genus *Turdus* (Thrufh)
Motacilla (Warbler)

89. Lettered ORNITHOLOGY, Elementary Plate I.
In the genus *M. Regulus* (Gold-crefted Wren)

CLASS AMPHIBIA.

ORDER I. REPTILES.

GENUS TESTUDO.

Marine Turtles.

93. Lettered AMPHIBIA, Plate X.
Fig. 5. *Teftudo mydas*, Efculent Green Turtle
6. *Teftudo imbricata*, Hawkfbill Turtle

Land Tortoifes.

Fig. 1. *Teftudo denticulata*, Denticulated Tortoife
2. *Teftudo europæa*, Green Speckled Tortoife
3. *Teftudo guttata*, Spotted Tortoife
4. *Teftudo picta*, Painted Tortoife

PLATE

GENUS RANA.

94. Lettered AMPHIBIA, Plate I.
Fig. 1. *Rana Pipa*, Surinam Toad—*Female with her young neftling in cellules on the back*
2. *Rana bicolor*, Two-coloured Frog
3. *Rana paradoxa*, Paradoxical Frog, in the fifh-like former tad-pole ftate
4. *Rana arborea*, Tree Frog.

GENUS LACERTA.

95. Lettered AMPHIBIA, Plate VIII.
Fig. 1. *Lacerta Salamandra*, Salamander
2. *Lacerta Vittata*, Forked Lizard
3. *Lacerta Chamæleon*, Chameleon
4. *Lacerta agilis*, Green Lizard
5. *Lacerta lemnifcata*, Eight-lined Lizard

96. Lettered AMPHIBIA, G. Lacerta, Plate IX.
Fig. 1. *Lacerta fcincoides*, Auftralafian Galliwafp
2. *Lacerta chalcides*, Chalcides Lizard
3. *Lacerta apus*, Apodal Lizard

GENUS DRACO.

Fig. 4. *Draco volans*, Flying Dragon, (*Lacerta volans*, Flying lizard)

GENUS SIREN.

97. Lettered AMPHIBIA, G. Siren, Plate VI.
Fig. 1. *Siren lacertina*, Eel-fhaped Siren
2. *Siren anguina*, Anguine Siren

ORDER II. SERPENTS.

GENUS CROTALUS.

98. Lettered AMPHIBIA, G. Crotalus, Plate II.
Fig. 1. *Crotalus horridus*, Banded Rattle-fnake
2. *Crotalus Duriffus*, Striped Rattle-fnake

GENUS BOA.

99. Lettered AMPHIBIA, G. Boa, Plate V.
Fig. 1. *Boa conftrictor*, Great Boa Serpent
2. *Boa Phrygia*, Embroidered Boa Serpent
3. *Boa hortulana*, Garden Boa Serpent

GENUS COLUBER.

100. Lettered AMPHIBIA, G. Coluber, Plate IV.
Fig. 1. *Coluber nafcornis*, Horn-nofed Viper
2. *Coluber cerafles*, Ceraftes Viper
3. *Coluber naja*, Nagoo or Spectacle Viper

GENUS ANGUIS.

101. Lettered AMPHIBIA, G. Anguis, Plate III.
Fig. 1. *Anguis Corallinus*, Coral Slow Worm
2. *Anguis ater*, Black Banded Slow Worm
3. *Anguis Jamaicenfis*, Jamaica Slow Worm

GENUS AMPHISBÆNA.

102. Lettered AMPHIBIA, G. Amphifbæna, Plate VII.
Fig. 1. *Amphifbæna alba*, White Amphifbæna
2. *Amphifbæna fuliginofa*, Fuliginous Amphifbæna

PLATE

GENUS CÆCILIA.

102. Fig. 3. *Cæcilia tentacula*, Eel-ſhaped Cæcilia

GENUS HYDRUS.

103. Lettered AMPHIBIA, G. Hydrus

Fig. 1. *Hydrus colubrinus*, Colubrine Hydrus
2. *Hydrus bicolor*, Black-backed Hydrus

GENUS LANGAYA.

Fig. 3. *Langaya naſuta*, Snouted Langaya

GENUS ACROCHORDUS.

Fig. 4. *Acrochordus dubius*, Doubtful Acrochordus

ICHTHYOLOGY.

CLASS PISCES.

ORDER APODES.

GENUS MURÆNA.

104. Lettered Order Apodes, Plate I.

Fig. 1. *Muræna anguilla*, Eel Muræna, or Common Eel

GENUS SYNBRANCHUS.

Fig. 2. *Synbranchus marmoratus*, Marbled Synbranchus

GENUS SPHAGEBRANCHUS.

Fig. 3. *Sphagebranchus roſtratus*, Snouted Sphagebranchus

GENUS GYMNOTUS.

Fig. 4. *Gymnotus electricus*, Electric Gymnotus

GENUS GYMNOTHORAX.

Fig. 5. *Gymnothorax muræna*, Eel Gymnothorax
6. *Gymnothorax catenatus*, Chain Gymnothorax

GENUS STOMATEUS.

105. Lettered Order Apodes, Plate II.

Fig. 1. *Stomateus cinereus*, Aſh-coloured Stomateus
2. *Stomateus niger*, Black Stomateus

GENUS STYLEPHORUS.

Fig. 3. *Stylephorus chordatus*, Chordated Stylephorus

GENUS TRICHIURUS.

Fig. 4. *Trichiurus argenteus*, Silvery Trachiurus

GENUS STERNOPTYX.

Fig. 5. *Sternoptyx diaphana*, Diaphanous Sternoptyx

GENUS XIPHIAS.

Fig. 6. *Xiphias gladius*, Sword-fiſh

GENUS ANARHICHAS.

Fig. 7. *Anarhicas lupus*, Ravenous Wolf-fiſh

PLATE

ORDER JUGULARES.

GENUS TRACHINUS.

106. Lettered Order Jugulares, Plate I.

Fig. 1. *Trachinus major*, Great Weever
2. *Trachinus draco*, Small Weever

GENUS URANOSCOPUS.

Fig. 3. *Uranoſcopus ſcaber*, Rough Stargazer

GENUS CALLIONYMUS.

Fig. 4. *Callionymus dracunculus*, Sordid Dragonet
5. *Callionymus lyra*, Gemmous Dragonet

GENUS GADUS.

107. Lettered ICHTHYOLOGY, Order Jugulares, Plate II.

Fig. 1. *Gadus morhua*, Cod-fiſh
2. *Gadus carbonarius*, Coal-fiſh
3. *Gadus minutus*, Poor
4. *Gadus Tau*, Tau Cod-fiſh

GENUS BLENNIUS.

Fig. 5. *Blennius maris*, Ocellated Blenny

GENUS KURTUS.

Fig. 6. *Kurtus indicus*, Indian Kurtus

ORDER THORACICI.

GENUS CEPOLA.

108. Lettered ICHTHYOLOGY, Order Thoracici, Plate I.

Fig. 1. *Cepola Tænia*, Ribband-fiſh

GENUS ECHINEIS.

Fig. 2. *Echineis Remora*, Mediterranean Sucking-fiſh

GENUS CORYPHÆNA.

Fig. 4. *Coryphæna hippurus*, Common Coryphene
5. *Coryphæna pentadactyla*, Five-ſpotted Coryphene

GENUS GOBIUS.

Fig. 3. *Gobius minutus*, Spotted Goby

GENUS COTTUS.

Fig. 6. *Cottus grunniens*, Grunting Bull-head
7. *Cottus cataphractus*, Mailed Bull-head

GENUS SCORPÆNA.

109. Lettered ICHTHYOLOGY, Order Thoracici, Plate II.

Fig. 1. *Scorpæna Scrofa*, Hog Sea-Scorpion
2. *Scorpæna horrida*, Horrid Sea-Scorpion
3. *Scorpæna antennata*, Antennated Sea-Scorpion

GENUS ZEUS.

Fig. 4. *Zeus gallus*, American Zeus
5. *Zeus ciliaris*, Filamentous Zeus
6. *Zeus inſidiator*, Inſidious Zeus

PLATE

GENUS PLEURONECTES.

110. Lettered ICHTHYOLOGY, Order Thoracici, Plate III.

Fig. 1. *Pleuronectes Zebra*, Zebra Sole
2. *Pleuronectes Argus*, Argus Flounder
3. *Pleuronectes plateſſa*, Plaice
4. *Pleuronectes bilineatus*, Bilineated Sole

111. Lettered ICHTHYOLOGY, Order Thoracici, Plate IV.

Fig. 1. *Pleuronectes punctatus*, Dotted Flounder

GENUS CHÆTODON.

110. Lettered ICHTHYOLOGY, Order Thoracici, Plate III.

Fig. 5. *Chætodon bicolor*, Two-coloured Chætodon
6. *Chætodon faſciatus*, Banded Chætodon

111. Lettered ICHTHYOLOGY, Order Thoracici, Plate IV.

Fig. 2. *Chætodon imperator*, Imperial Chætodon
3. *Chætodon marginatus*, Bordered Chætodon
4. *Chætodon arcuatus*, Bowed Chætodon
5. *Chætodon roſtratus*, Snouted Chætodon
6. *Chætodon Teira*, Teira Chætodon

GENUS SPARUS.

112. Lettered ICHTHYOLOGY, Order Thoracici, Plate VII.

Fig. 1. *Sparus falcatus*, Falcated Gilthead
2. *Sparus Surinamenſis*, Surinam Gilthead
3. *Sparus faſciatus*, Banded Gilthead
4. *Sparus chryſurus*, Golden-tailed Gilthead
5. *Sparus annularis*, Annulated Gilthead
6. *Sparus mæna*, Cackarel

GENUS SCARUS.

113. Lettered ICHTHYOLOGY, Order Thoracici, Plate VIII.

Fig. 7. *Scarus viridis*, Green Scarus

114. Lettered ICHTHYOLOGY, Order Thoracici, Plate X. & XI.

1. *Scarus cretenſis*, Large-ſcaled Scarus

GENUS LABRUS.

113. Lettered ICHTHYOLOGY, Order Thoracici, Plate VIII.

Fig. 1. *Labrus microlepidotus*, Large-ſcaled Wraſſe
2. *Labrus trichopterus*, Hair-finned Wraſſe
3. *Labrus malapterus*, Soft-finned Wraſſe
4. *Labrus maculatus*, Spotted Wraſſe
5. *Labrus punctatus*, Dotted Wraſſe
6. *Labrus melagaſter*, Black-bellied Wraſſe

GENUS SCIÆNA.

114. Lettered ICHTHYOLOGY, Order Thoracici, Plate X. & XI.

Fig. 2. *Sciæna diacantha*, Two-ſpined Umber, or Sciæna
3. *Sciæna cirroſa*, Cirroſe Sciæna
4. *Sciæna punctata*, Dotted Sciæna
5. *Sciæna plumiera*, Plumier's Sciæna

PLATE

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.

Fig. 1. *Sciæna undecimalis*, Eleven-ſpot Sciæna
2. *Sciæna lineata*, Lineated Sciæna

GENUS PERCA.

115. Lettered ICHTHYOLOGY, Order Thoracici, Plate IX.

Fig. 1. *Perca Braſilienſis*, Braſilian Perch
2. *Perca ſaxatilis*, Rock Perch
3. *Perca punctata*, Dotted Perch
4. *Perca guttata*, Guttated Perch
5. *Perca maculata*, Spotted Perch
6. *Perca bimaculata*, Bimaculated Perch

GENUS TRACHYCHTHYS.

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.

Fig. 4. *Trachychthys auſtralis*, Auſtralaſian Trachychthys

GENUS GASTEROSTEUS.

Fig. 3. *Gaſteroſteus aculeatus*, Stickleback

GENUS SCOMBER.

117. Lettered ICHTHYOLOGY, Order Thoracici, Plate XII.

Fig. 1. *Scomber Sarda*, (*Scomber Scomber*, Linn.) Common Mackarel
2. *Scomber niger*, Black Mackarel
3. *Scomber ſaliens*, Salient Mackarel
4. *Scomber ruber*, Red Mackarel

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.

Fig. 5. *Scomber Rotleri*, Rotlerian Mackarel
6. *Scomber aculeatus*, Aculeated Mackarel

GENUS MULLUS.

118. Lettered ICHTHYOLOGY, Order Thoracici, Plate XIII.

Fig. 1. *Mullus ſurmuletus*, Surmullet

GENUS TRIGLA.

Fig. 2. *Trigla Carolina*, Caroline Gurnard
3. *Trigla Hirundo*, Swallow Gurnard
5. *Trigla cataphractus*, Mailed Gurnard
4. *Trigla punctata*, Dotted Gurnard

GENUS LONCHIURUS.

117. Lettered ICHTHYOLOGY, Order Thoracici, Plate XII.

Fig. 5. *Lonchiurus barbatus*, Bearded Lonchiurus

ORDER ABDOMINALES.

GENUS COBITIS.

119. Lettered ICHTHYOLOGY, Order Abdominales, Plate V.

Fig. 4. *Cobitis foſſilis*, Great Loche

GENUS ANABLEPS.

Fig. 5. *Anableps tetrophthalmus*, Four-eyed Anableps

GENUS SILURUS.

Fig. 1. *Silurus clarias*, Long-bearded Silurus

PLATE

GENUS PLATYSTACHUS.

119. Fig. 6. *Platyſtachus anguillaris*, Eel-ſhaped Platyſtachus

GENUS LORICARIA.

Fig. 2. *Loricaria coſtalis*, Ribbed Loricaria
3. *Loricaria flava*, Yellow Loricaria

GENUS SALMO.

120. Lettered ICHTHYOLOGY, Order Abdominales, Plate III.

Fig. 1. *Salmo bimaculatus*, Bimaculated Salmon
2. *Salmo faſciatus*, Banded Salmon
3. *Salmo tumbil*, Barred Salmon
4. *Salmo Odoe*, Odoe Salmon
5. *Salmo Gaſteropelecus*, Yellow-finned Salmon
6. *Salmo Friderici*, Frederician Salmon
7. *Salmo rhombeus*, Rhombic Salmon

GENUS FISTULARIA.

121. Lettered ICHTHYOLOGY, Order Abdominales, Plate II.

Fig. 1. *Fiſtularia chinenſis*, Chineſe Tobacco-pipe Fiſh
2. *Fiſtularia tabaccaria*, Spotted Tobacco-pipe Fiſh

GENUS ESOX.

Fig. 3. *Eſox oſſeus*, Bony Gar Fiſh, or Sea Pike
4. *Eſox Belone*, Sea Pike, or Gar Fiſh
5. *Eſox braſilienſis*, Braſilian Pike, or Gar Fiſh

GENUS ELOPS.

Fig. 6. *Elops Saurus*, Saury Elops

GENUS ARGENTINA.

Fig. 7. *Argentina Sphyræna*, European Argentine

GENUS ATHERINA.

122. Lettered ICHTHYOLOGY, Order Abdominales, Plate I.

Fig. 1. *Atherina Hepſetus*, Common Atherine

GENUS MUGIL.

Fig. 2. *Mugil Tang*, Tang Mullet
3. *Mugil cephalus*, Grey Mullet

GENUS EXOCŒTUS.

Fig. 4. *Exocœtus evolans*, Mediterranean Flying Fiſh
5. *Exocœtus exiliens*, Swallow Flying Fiſh
6. *Exocœtus Meſogaſter*, Atlantic Flying Fiſh

GENUS POLYNEMUS.

123. Lettered ICHTHYOLOGY, Order Abdominales, Plate IV.

Fig. 1. *Polynemus paradiſeus*, Paradiſe Polyneme
2. *Polynemus decadactylus*, Ten-fingered Polymene

PLATE

GENUS CLUPEA.

123. Fig. 3. *Clupea Thriſſa*, Thriſſa Herring
4. *Clupea naſus*, Naſal Herring

GENUS CYPRINUS.

Fig. 5. *Cyprinus cultratus*, Razor Carp
6. *Cyprinus auratus*, Golden Carp, *var.*
7. *Cyprinus phoxinus*, Minnow

ORDER BRANCHIOSTEGI.

GENUS OSTRACION.

124. Lettered ICHTHYOLOGY, Order Branchioſtegi, Genus Oſtracion, Plate V.

Fig. 1. *Oſtracion turritus*, Eared Trunk Fiſh
2. *Oſtracion triqueter*, Triangular Trunk Fiſh
3. *Oſtracion naſus*, Snouted Trunk Fiſh
4. *Oſtracion bicaudalis*, Bicaudate Trunk Fiſh
5. *Oſtracion quadricornis*, Four-horned Trunk Fiſh
6. *Oſtracion cornutus*, Horned Trunk Fiſh

GENUS TETRODON.

125. Lettered ICHTHYOLOGY, Order Branchioſtegi, Plate V.

Fig. 1. *Tetrodon hiſpidus*, Hiſpid Tetrodon
2. *Tetrodon ocellatus*, Ocellated Tetrodon
3. *Tetrodon lineatus*, Lineated Tetrodon
4. *Tetrodon lagocephalus*, Hare Tetrodon

GENUS DIODON.

Fig. 5. *Diodon Hyſtrix*, Porcupine Diodon
6. *Diodon orbicularis*, Round Diodon

GENUS SYNGNATHUS.

126. Lettered ICHTHYOLOGY, Order Branchioſtegi, Plate VI.

Fig. 1. *Syngnathus foliatus*, Foliated Pipe Fiſh
2. *Syngnathus acus*, Great Pipe Fiſh
3. & 3.* *Syngnathus Hippocampus*, Sea-Horſe Pipe Fiſh

GENUS PEGASUS.

Fig. 4. & 4.* *Pegaſus Draconis*, Dragon Pegaſus
5. & 5.* *Pegaſus natans*, Swimming Pegaſus

GENUS CENTRISCUS.

Fig. 6. *Centriſcus ſcutatus*, Mailed Centriſcus

GENUS BALISTES.

127. Lettered ICHTHYOLOGY, Order Branchioſtegi, Plate III.

Fig. 1. *Baliſtes vetula*, Old Wife
2. *Baliſtes maculatus*, Spotted Old Wife
3. *Baliſtes aculeatus*, Aculeated Old Wife
4. *Baliſtes monoceros*, One-horned Old Wife

GENUS CYCLOPTERUS.

128. Lettered ICHTHYOLOGY, Order Branchioſtegi, Plate IV.

Fig. 1. *Cyclopterus Lumpus*, Common Lump-ſucker

PLATE

128. Fig. 2. *Cyclopterus ocellatus*, Ocellated Lump-fucker
3. *Cyclopterus lineatus*, Lineated Lump-fucker

GENUS LOPHIUS.

Fig. 4. *Lophius marmoratus*, Marbled Angler
5. *Lophius Hiftrio*, Harlequin Angler
6. *Lophius roftratus*, Beaked Angler
7. *Lophius pictus*, Painted Angler

ORDER CHONDROPTERYGII.

GENUS ACIPENSER.

129. Lettered ICHTHYOLOGY, Order Chondropterygii, Plate I.

Fig. 3. *Acipenfer Sturio*, Common Sturgeon
4. *Acipenfer Ruthenus*, Sterlet

GENUS CHIMÆRA.

Fig. 2. *Chimæra monftrofa*, Sea-monfter
5. *Chimæra callorhynchus*, Southern Sea-monfter

GENUS PRISTIS.

Fig. 1. *Priftis antiquorum*, Common Saw-fifh

GENUS SQUALUS.

130. Lettered ICHTHYOLOGY, Order Chondropterygii, Plate II.

Fig. 1. *Squalus glaucus*, Blue Shark
2. *Squalus Catulus*, Leffer fpotted Shark
3. *Squalus Squatina*, Angel Shark
4. *Squalus Zygæna*, Hammer-headed Shark
5. *Squalus Zebra*, Zebra Shark

GENUS SPATULARIA.

Fig. 6. *Spatularia reticulata*, Reticulated Spatularia

GENUS RAJA.

131. Lettered ICHTHYOLOGY, Order Chondropterygii, Plate VI.

Fig. 1. *Raia diabolus*, Dæmon Ray
2, 3. *Raia clavata*, Thorn-back
4. *Raia undulata*, Undulated Ray
5. *Raia torpedo*, Electric Ray
6. *Raia rhinobatos*, Long-nofed Ray

GENUS GASTROBRANCHUS.

132. Lettered ICHTHYOLOGY, Order Chondropterygii, Plates III., IV., V.

Fig. 1. *Gaftrobranchus coecus*, Hag-fifh
2. *Gaftrobranchus Dombeyi*, Dombeyan Hag-fifh

GENUS PETROMYZON.

Fig. 3. *Petromyzon marinus*, Marine Lamprey
4. *Petromyzon fluviatilis*, River Lamprey
5. *Ditto*, the young, fhewing the under furface

PLATE

ENTOMOLOGY.

CLASS INSECTA.

ORDER COLEOPTERA.

GENUS SCARABÆUS.

133. Lettered ENTOMOLOGY, Order Coleoptera, Plate I.

Fig. 1. *Scarabæus Hercules*
2. *Scarabæus Chorinæus*
3. *Scarabæus Tityus*
4. *Scarabæus moloffus*
5, 6. *Scarabæus carnifex*, male and female
7. *Scarabæus facer*

GENUS GOLIATHUS.

134, Lettered ENTOMOLOGY, Genus Goliathus, Plate I.

Fig. 1. *Goliathus Cæcicus*
2. *Goliathus magnus*

GENUS LUCANUS.

135. Lettered ENTOMOLOGY, Order Coleoptera, Plate IV.

Fig. 1. *Lucanus cervus*
2. *Lucanus inermis*

GENUS DERMESTES.

Fig. 3. *Dermeftes viginti-guttatus*
4. *Dermeftes fex-dentatus*
5. *Dermeftes brachypterus*
6. *Dermeftes pedicularius*
7. *Dermeftes picipes*

GENUS BOSTRICHUS.

136. Lettered ENTOMOLOGY, Order Coleoptera, Plate V.

Fig. 12. *Boftrichus pubefcens*
1. *Boftrichus polygraphus*
2. *Boftrichus typographus*
3. *Boftrichus piniperda*

GENUS MELYRIS.

137. Lettered ENTOMOLOGY, Order Coleoptera, Plate XII.

Fig. 13. *Melyris viridis*

GENUS PTINUS.

136. Lettered ENTOMOLOGY, Order Coleoptera, Plate V.

Fig. 4. *Ptinus Scotius*
5. *Ptinus Imperialis*
6. *Ptinus fex-punctatus*
7. *Ptinus teffellatus*
8. *Ptinus pectinicornis*

GENUS HISTER.

Fig. 9. *Hifter unicolor*
10. *Hifter planus*

GENUS GYRINUS.

Fig. 11. *Gyrinus natator*

GENUS BYRRHUS.

137. Lettered ENTOMOLOGY, Order Coleoptera, Plate XII.

Fig. 1. *Byrrhus pilula*

Plate

Genus Anthrenus.

137. Fig. 2. *Anthrenus Scrophulariæ*

Genus Silpha.

Fig. 6. *Silpha Germanica*
7. *Silpha veſpillo*
8. *Silpha thoracica*
9. *Silpha humator*
10. *Silpha obſcura*
11. *Silpha quadrimaculata*
12. *Silpha ſinuata*

135. Lettered Entomology, Order Coleoptera, Plate IV.

Fig. 8. *Silpha hæmorrhoidalis*
9. *Silpha rufipes*
10. *Silpha quadri-guttata*
11. *Silpha marginalis*

Genus Opatrum.

138. Lettered Entomology, Order Coleoptera, Plate IX.

Fig. 1. *Opatrum ſabuloſum*

Genus Tritoma.

Fig. 2. *Tritoma rufipes*
3. *Tritoma piloſa*

Genus Tetratoma.

Fig. 4. *Tetratoma cinnamomeum*
5. *Tetramona ſungorum*
6. *Tetratoma ancora*

Genus Cassida.

Fig. 7. *Caſſida groſſa*
8. *Caſſida lateralis*
9. *Caſſida cruentata*
10. *Caſſida maculata*

Genus Coccinella.

139. Lettered Entomology, Order Coleoptera, Plate XIII.

Fig. 1. *Coccinella 16-guttata*
2. *Coccinella oblongo-guttata*
3. *Coccinella 12-puſtulata*
4. *Coccinella frontalis*
5. *Coccinella 12-punctata*
6. *Coccinella 22-punctata*
7. *Coccinella ſeptem-notata*
8. *Coccinella 4-puſtulata*
9. *Coccinella punctata*
10. *Coccinella analis*
11. *Coccinella parvula*
12. *Coccinella 6-puſtulata*

Genus Chrysomela.

140. Lettered Entomology, Order Coleoptera, Genus Chryſomela, Plate XIII.

Fig. 1. *Chryſomela gigantea*
2. *Chryſomela ſurinamenſis*
3. *Chryſomela 20-punctata*
4. *Chryſomela cyanicornis*

Plate

Fig. 5. *Chryſomela cyanipes*
6. *Chryſomela limbata*
7. *Chryſomela didymus*
8. *Chryſomela boleti*
9. *Chryſomela 14-guttata*
10. *Chryſomela marginalis*
11. *Chryſomela marginata*
12. *Chryſomela marginella*
13. *Chryſomela hannoveriana*

Genus Cryptocephalus.

141. Lettered Entomology, Order Coleoptera, Plate VIII.

Fig. 1. *Cryptocephalus cordiger*
2. *Cryptocephalus variabilis*
3. *Cryptocephalus diſtinguendus*
4. *Cryptocephalus lobatus*
5. *Cryptocephalus obſcurus*

Genus Cistela.

137. Lettered Entomology, Order Coleoptera, Plate XII.

Fig. 3. *Ciſtela pallida*
4. *Ciſtela læta*
5. *Ciſtela lepturoides*

Genus Crioceris.

141. Lettered Entomology, Order Coleoptera, Plate VIII.

Fig. 6. *Crioceris campeſtris*
7. *Crioceris punctatus*

Genus Hispa.

Fig. 8. *Hiſpa mutica*

Genus Bruchus.

Fig. 9. *Bruchus bipunctatus*

Genus Pausus.

Fig. 10. *Pauſus denticornis* (*Donov. Ind. Inſ.*)
11. *Pauſus thoracicus* (*Donov. Ind. Inſ.*)
12. *Pauſus Fichtelii* (*Donov. Ind. Inſ.*)
13. *Pauſus pectinicornis* (*Donov. Ind. Inſ.*)

Genus Curculio.

142. Lettered Entomology, Order Coleoptera, Plate XI.

Fig. 1. *Curculio bimaculatus*
2. *Curculio palmarum*
3. *Curculio elegans*
4. *Curculio annulatus*
5. *Curculio imperialis*
6. *Curculio eremitus*
7. *Curculio hemipterus*
8. *Curculio brachypteros* (*nigro ſpinoſus*)
9. *Curculio aſſimilis*
10. *Curculio rhinomacer*
11. *Curculio regalis* (*Donov. Ind. Inſ.*)
12. *Curculio bilineatus*
13. *Curculio viridis*
14 *Curculio bachus*
15. *Curculio betulæ*

PLATE

GENUS PRIONUS.

143. Lettered ENTOMOLOGY, Order Coleoptera, Plate II.
Fig. 1. *Prionus longimanus*
2. *Prionus unidentatus*

GENUS CERAMBYX.

Fig. 3. *Cerambyx imperialis*

GENUS LAMIA.

Fig. 4. *Lamia quadrimaculata*

GENUS CLYTUS.

Fig. 5. *Clytus thoracicus*

GENUS SAPERDA.

Fig. 6. *Saperda collaris*
7. *Saperda nigro-virens*

GENUS RHAGIUM.

Fig. 8. *Rhagium bifasciatum*

GENUS CICINDELA.

144. Lettered ENTOMOLOGY, Order Coleoptera, Plate X.
Fig. 1. *Cicindela campestris*
2. *Cicindela sylvatica*
3. *Cicindela flexuosa*
4. *Cicindela sinuata*
5. *Cicindela capensis*
6. *Cicindela littoralis*
7. *Cicindela germanica*
8. *Cicindela riparia*
9. *Cicindela paludosa*
10. *Cicindela aquatica*
11. *Cicindela flavipes*

GENUS DYTISCUS.

145. Lettered ENTOMOLOGY, Order Coleoptera, Plate XII.
Fig. 1. *Dytiscus piceus*
2. *Dytiscus latissimus*
3. *Dytiscus marginatus*
4. *Dytiscus cinereus*
5. *Dytiscus caraboides*
6. *Dytiscus sulcatus*
7. *Dytiscus minutus*
8. *Dytiscus bipustulatus*
9. *Dytiscus uliginosus*

GENUS CARABUS.

146. Lettered ENTOMOLOGY, Order Coleoptera, Plate XV.
Fig. 1. *Carabus sexmaculatus*
2. *Carabus sycophanta*
3. *Carabus punctatus*
4. *Carabus auronitens*

PLATE

146. Fig. 5. *Carabus arenarius*
6. *Carabus granulatus*
7. *Carabus thoracicus*
8. *Carabus bimaculatus*
9. *Carabus germanus*
10. *Carabus prasinus*
11. *Carabus crux minor*
12. *Carabus semipunctatus*

GENUS TENEBRIO.

147. Lettered ENTOMOLOGY, Order Coleoptera, Plate XI.
Fig. 1. *Tenebrio gigas*
2. *Tenebrio femoratus*
3. *Tenebrio molitor*
4. *Tenebrio curvipes*
5. *Tenebrio culinaris*
6. *Tenebrio ferrugineus*

GENUS PIMELIA.

Fig. 7. *Pimelia gages*
8. *Pimelia sepidium*
9. *Pimelia tragosita*

GENUS HELOPS.

Fig. 10. *Helops lanipes*
11. *Helops fasciata*
12. *Helops fusca*

GENUS LYTTA.

148. Lettered ENTOMOLOGY, Order Coleoptera, Plate VI.
Fig. 1. *Lytta vesicatoria*
2. *Lytta dubia*
15. *Lytta Schaefferi*

GENUS MELOE.

Fig. 3. *Meloe proscarabæus*
4. *Meloe variegatus*

GENUS MORDELLA.

Fig. 5. *Mordella bicolor*
6. *Mordella flava*
7. *Mordella dorsalis*
8. *Mordella frontalis*

GENUS MYLABRIS.

Fig. 9—11. *Mylabris cichorei*, var.

GENUS STAPHYLINUS.

Fig. 12. *Staphylinus hirtus*

GENUS FORFICULA.

Fig. 13, 14. *Forficula gigantea*

149. Lettered ENTOMOLOGY, Coleoptera, Plate III.
Supplementary Plate of the Order Coleoptera*

* This Plate, which we have placed as an Appendix to the Coleoptera tribe, was engraved and published in the Cyclopædia before the Proprietors had determined to undertake the very ample elucidation of the subject, which they were afterwards induced to adopt. The selection of the subjects had been also left at the discretion of the artist;

PLATE

ORDER HEMIPTERA.

150. Lettered ENTOMOLOGY, Order Hemiptera, Plate I.

Fig. 1. *Blatta orientalis*

GENUS MANTIS.

Fig. 2. *Mantis bifpinofa*
3. *Mantis precaria*
4. *Mantis gongyloides*
5. *Mantis ftrumaria*

GENUS GRYLLUS.

151. Lettered ENTOMOLOGY, Order Hemiptera, Plate II.

Fig. 1. *Gryllus Dux*
2. *Gryllus nafutus*
3. *Gryllus viridiffimus minor*
4. *Gryllus fubulata*
5. *Gryllus Gryllo-talpa*
6. *Larva of Gryllus*
7. *Pupa of Gryllus morbillofus*

GENUS FULGORA.

152. Lettered ENTOMOLOGY, Order Hemiptera, Plate III.

Fig. 1. *Fulgora Lanternaria*, in a refting pofition
2. with expanded wings
3. *Fulgora candelaria*
4. *Cicada Tibicien*, (*Tettigonia*, Fabr.)
5. *Cicada hæmatodes*
6. *Cicada ftridula*
7. *Cicada phalænoides*
8. *Cicada fanguinolenta*
9. *Cicada taurus*
10. *Cicada fpinofa*

PLATE

GENUS NOTONECTA.

152. Fig. 11. *Notonecta glauca*

GENUS NEPA.

153. Lettered ENTOMOLOGY, Order Hemiptera, Plate IV.

Fig. 1. *Nepa grandis*

GENUS CIMEX.

Fig. 2. *Cimex lectularius*
3. *Cimex aurantius*

GENUS APHIS.

Fig. 4. *Aphis perficæ*
5. *Aphis falicis*
6. *Aphis gallarum*

GENUS CHERMES.

Fig. 7. *Chermes alni*
8. *Chermes buxi*

GENUS COCCUS.

Fig. 9. *Coccus Fol. Quercus*
10. *Coccus perficæ*
11. *Coccus hefperidum*
12. *Coccus cataphractus*

GENUS THRIPS.

Fig. 13. *Thrips phyfapus*
14. *Thrips juniperina*

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and thefe, it muft be allowed, were not chofen altogether with that due attention to accuracy which the intricacy of this branch of Natural Hiftory demanded. Thefe infects were copied, we underftand, from fpecimens in the very valuable cabinet of Mr. Francillon; but owing to the difperfion of that collection by public fale, the means of comparifon has paffed away, and the death of the artift then employed, as well as of the zealous proprietor of that collection, has oppofed a period to enquiry further. The far greater and more coftly portion of the Francillonian Cabinet is indeed preferved, being incorporated in the princely cabinet of Alexander McLeay, Efq., a cabinet to which true fcience is never refufed an eafy accefs; but the infects in queftion having been removed from their refpective fituations, in Mr. Francillon's drawers, they can be no longer recognized as the fpecimens from which the figures in this plate are taken; and this, in fome few inftances at leaft, it muft be confeffed, is requifite to enable us to fpeak of them with certainty. We may obferve, moreover, that very few names accompany the articles reprefented in this Plate of Mr. Edwards; and of thofe few fome are certainly faulty. *Hifpa* is doubtful (a true Hifpa has been fince given in Plate 141. fig. 8.). *Bruchus* is erroneous, and appears to be, with the exception of the antennæ, Attelabus Coryli; (a true Bruchus is inferted by us in Plate 141. fig. 9.); and his infect named Attelabus, has much the appearance of Mylabris, except in having pectinated inftead of moniliform antennæ: neverthelefs this may be a Clerus, and allied to Apiarus. (See Plate 148. fig. 9.) Lampyris is indifferent; Cantharis unintelligible. With thefe, and fome few other exceptions, the Plate fhould be preferved, as it contains other infects of intereft, the repetition of whofe figures has been purpofely avoided in felecting the materials for the reft of the Plates of Coleoptera.

We believe Curculio, No. 1. to be Curculio bifpinofus; No. 3. to be Curculio Imperialis, the Brafilian or Diamond Beetle; No. 4. Curculio vittata, of Jamaica; Cerambyx, No. 3., C. Mofchatus; No. 4. Cerambyx marginatus; Necydalis, No. 2., N. cærulea; Lampyris, fig. 1., L. vulgaris, male (having wings); No. 2. the female (being apterous, or without wings); Elater, No. 1., E. ocellatus, Weft Indies; No. 2. is uncertain; but is, no doubt, an Elater, placed on its back, to fhew the fituation of the pointed fternum in that genus, by ftriking which upon the breaft, the infect is enabled to fpring up with inftantaneous velocity when laid down in that pofition.

PLATE

ORDER LEPIDOPTERA.

GENUS PAPILIO.

154. Lettered ENTOMOLOGY, Order Lepidoptera, Plate I.

Fig. 1. *Papilio Hector, Eq. Troës* 1. Upper figure on the left hand
2. *Papilio Echius, Eq. Troës* 2. Right-hand ſide, middle figure
3. *Papilio Deiochus, Eq. Achiv.* 2. Left-hand ſide, middle figure
4. *Papilio Agamemnon, Eq. Achiv.* 2. Loweſt figure on the left hand
5. *Papilio Machaon, Eq. Achiv.* 3. Loweſt figure on the right hand
6. *Papilio Medon, Eq. Achiv.* 4. Upper figure on the right hand
7. *Papilio Mecyſtes, Eq. Achiv.* 5. Butterfly with erect wings, in the middle of the Plate

GENUS SPHINX.

155. Lettered ENTOMOLOGY, Order Lepidoptera, Plate VII.

Fig. 1. *Sphinx ruſtica.* The largeſt figure in the lower part of the Plate
2. *Sphinx vitis.* The largeſt figure in the upper part of the Plate
3. *Sphinx Ello.* Shewing the natural erect poſition of the wings in this family of Sphinges, when they are at reſt. Placed on the left hand, towards the middle of the Plate
4. *Sphinx fuciformis,* (*Seſia,* Fabricius). Upper figure on the left hand
5. *Sphinx chryſorrhoa,* (*Seſia,* Fabricius). Loweſt figure in the Plate on the left ſide
6. *Sphinx tipuliformis,* (*Seſia,* Fabricius). Smalleſt figure in the Plate, and placed in the centre, in a flying poſition
7. *Sphinx Polymena,* (*Zygæna* of Fabricius, Donov. Inſ. China). Right hand, towards the middle of the Plate
8. *Sphinx fauſta,* (*Zygæna fauſta,* Fabricius). Bottom figure of the Plate on the right hand

GENUS PHALÆNA.

156. Lettered ENTOMOLOGY, Order Lepidoptera, Plate I. Phalæna

Fig. 1. *Phalæna Atlas* (*Bombyx fam.*), with wings expanded

157. Lettered ENTOMOLOGY, Order Lepidoptera, Plate II.

Fig. 1. *Phalæna Saturnus* (*Bombyx*)

156. Lettered ENTOMOLOGY, Order Lepidoptera, Plate I.

Fig. 2. *Phalæna Laocoon* (*Bombyx*)
3. *Phalæna Luna* (*Bombyx*)
4. *Phalæna Pavonia* (*Bombyx*)
5. *Phalæna Tau* (*Bombyx*)

PLATE

157. Lettered ENTOMOLOGY, Order Lepidoptera, Plate II.

Fig. 2. *Phalæna Quercifolia* (*Bombyx*), with wings reverſed
3. *Phalæna potatoria* (*Bombyx*)
4. *Phalæna verſicolora* (*Bombyx*)
5. *Phalæna vinula* (*Bombyx*)
6. *Phalæna Hebe* (*Bombyx*), with wings deflected

ORDER NEUROPTERA.

GENUS LIBELLULA.

158. Lettered ENTOMOLOGY, Order Neuroptera, Plate I.

Fig. 1. *Libellula indica*
2. *Libellula grandis,* (*Æſhna* genus, Fabr.)
3. *Libellula clavata,* (*Æſhna,* Fabr.)
4. *Libellula linearis,* (*Agrion* genus, Fabr.)
5. *Libellula virgo,* (*Agrion,* Fabr.)
6. *Libellula puella,* (*Agrion,* Fabr.)

GENUS EPHEMERA.

Fig. 7. *Ephemera vulgata*

GENUS PHRYGANEA.

Fig. 8. *Phryganea varia*

GENUS HEMEROBIUS.

159. Lettered ENTOMOLOGY, Order Neuroptera, Plate II.

Fig. 1. *Hemerobius chryops*

GENUS MYRMELEON.

Fig. 2. *Myrmeleon Libelluloides*
3. *Myrmeleon Americanus,* (*Aſcalaphus Americanus,* Fabr.)
4. *Myrmeleon barbarus,* (*Aſcalaphus barbarus,* Fabr.)

GENUS PANORPA.

Fig. 5. *Panorpa communis*
6. *Panorpa coa*

GENUS RAPHIDIA.

Fig. 7. *Raphidia ophiopſis*

ORDER HYMENOPTERA.

GENUS CYNIPS.

160. Lettered ENTOMOLOGY, Order Hymenoptera Plate XI.

Fig. 1. *Cynips quercus folii*

GENUS TENTHREDO.

Fig. 2. *Tenthredo bimaculata*
3. *Tenthredo femorata*
4. *Tenthredo falcicornis*

GENUS SIREX.

Fig. 5. *Sirex gigas*
6. *Sirex juvencus*

PLATE

GENUS SPHEX.

160. Fig. 7. *Sphex lobata*

161. Lettered ENTOMOLOGY, Order Hymenoptera, Plate III.

Fig. 1. *Sphex ſabuloſa*, (*Ammophila*, Kirby)

GENUS ICHNEUMON.

160. Lettered ENTOMOLOGY, Order Hymenoptera, Plate XI.

Fig. 8. *Ichneumon flavicornis*
9. *Ichneumon perſuaſorius*

GENUS SCOLIA.

161. Lettered ENTOMOLOGY, Order Hymenoptera, Plate III.

Fig. 2. *Scolia flavifrons*

GENUS THYNNUS.

Fig. 3. *Thynnus emarginatus*

GENUS LEUCOPSIS.

Fig. 4. *Leucopſis dorſigera*

GENUS TIPHIA.

Fig. 5. *Tiphia nudata*
6. *Tiphia villoſa*

GENUS CHALCIS.

Fig. 7. *Chalcis ſiſpes*

GENUS CHRYSIS.

Fig. 8. *Chryſis ſplendida*
9. *Chryſis amethyſtina*
10. *Chryſis faſciata*
11. *Chryſis ignita*

GENUS VESPA.

162. Lettered ENTOMOLOGY, Order Hymenoptera, Plate XIII.

Fig. 1. *Veſpa cincta*
2. *Veſpa teſtacea*
3. *Veſpa arcuata*
4. *Veſpa faſciata*

GENUS APIS.

Fig. 5. *Apis feſtiva*
6. *Apis violacea*
7. *Apis æſtuans*

GENUS FORMICA.

Fig. 8. *Formica gigas*
9. *Formica bengalenſis*
10. *Formica bihamata*

GENUS MUTILLA.

Fig. 11. *Mutilla Americana*, (female)
12. *Mutilla bengalenſis*
13. *Mutilla rubra*

PLATE

ORDER DIPTERA.

GENUS OESTRUS.

163. Lettered ENTOMOLOGY, Order Diptera, Plate II.

Fig. 1, 2. *Oeſtrus equi*
3. *Oeſtrus bovis*
4. *Oeſtrus ovis*

GENUS TIPULA.

Fig. 5. *Tipula rivoſa*
6. *Tipula hortorum*
7. *Tipula variegata*
8. *Tipula crocata*
9. *Tipula punctata*
10. *Tipula atrata*
11. *Tipula plumoſa*
12. *Tipula pectinicornis*

GENUS DIOPSIS.

Fig. 13. *Diopſis ichneumonea*

GENUS MUSCA.

164. Lettered ENTOMOLOGY, Order Diptera, Plate IV.

Fig. 1. *Muſca groſſa*, hair of the antennæ naked
2. *Muſca hottentotta*
3. *Muſca biſaſciata*
4. *Muſca cupraria*
5. *Muſca vibrans*
6. *Muſca ſcybalaria*
7. *Muſca ſolſtitialis*
8. *Muſca onopordinis*
9. *Muſca ſtellata*
10. *Muſca ſaſciata*
11. *Muſca Chamæleon*, (*Stratiomys Chamæleon*, Fabr.)
12. *Muſca morio*
13. *Muſca clavicornis*, (*Ceria clavicornis*, Fabr.)
14. *Muſca ſcolopacea*, (*Rhagio ſcolopacea*, Fabr.)
15. *Muſca triangularia*
16. *Muſca analis*, (*Bibio analis*, Fabr.)
17. *Muſca tenax*, (*Syrphus tenax*, Fabr.)
18. *Muſca pendula*, (*Syrphus*, Fabr.)
19. *Muſca florea*, (*Syrphus*, Fabr.)
20. *Muſca lurida*
21. *Muſca veſpiformis*
22. *Muſca noctiluca*
23. *Muſca bilineata*
24. *Muſca uliginoſa*, (*Nemotelus uliginoſus*, Fabr.)

GENUS TABANUS.

165. Lettered ENTOMOLOGY, Diptera, Plate IV.

Fig. 1. *Tabanus bovinus*
2. *Tabanus tropicus*
3. *Tabanus bromius*
4. *Tabanus pluvialis*
5. *Tabanus ruſticus*
6. *Tabanus cæcutiens*

GENUS CULEX.

Fig. 7. 7.* *Culex pipiens*, natural ſize and magnified

PLATE

GENUS EMPIS.

165. Fig. 8. *Empis forcipata*
9. *Empis borealis*

GENUS STOMOXYS.

Fig. 10. *Stomoxys roſtrata*
11. *Stomoxys irritans*
12. *Stomoxys calcitrans*
13. *Stomoxys pungens*

GENUS CONOPS.

166. Lettered ENTOMOLOGY, Order Diptera, Plate I.
Fig. 1. *Conops ferruginea*
2. *Conops aculeata*
3. *Conops petiolata*

GENUS ASILUS.

Fig. 4. *Aſilus teutonus*
5. *Aſilus gibboſus*
6. *Aſilus crabroniformis*

GENUS BOMBYLIUS.

Fig. 7. *Bombylius major*
8. *Bombylius medius*

GENUS HIPPOBOSCA.

Fig. 9. *Hippoboſca equina*
10. *Hippoboſca ovina*
11. *Hippoboſca avicularia*
12. *Hippoboſca hirundinis*

APTERA.

GENUS TERMES.

167. Lettered Plate V. Aptera
Termes bellicoſus, Great African White Ant
Fig. 1. Labourers
2. Soldiers
3. King
4. 4. Males, which are furniſhed with wings
5. 5. Pregnant Females, or Queens
(All the above are repreſented of their natural ſize)
6. *Termes bellicoſus*, their Neſts in the diſtance

GENUS LEPISMA.

Fig. 7. *Lepiſma Polypoda*
8. *Lepiſma punctata*
9. *Lepiſma obſcura*
10. *Lepiſma lineatus*

GENUS PODURA.

Fig 11. *Podura Villoſa*, Upper and Under Surface

ORDER APTERA.

GENUS PEDICULUS.

68. Lettered ENTOMOLOGY, Order Aptera, Plate IV.
Fig. 1. *Pediculus humanus*, Human Louſe
2. *Pediculus Aſini*, Aſs's Louſe

PLATE

168. Fig. 3. *Pediculus cygni*, Swan's Louſe
4. *Pediculus corvi*, Crow's Louſe
5. *Pediculus picæ*, Magpie's Louſe
6. *Pediculus gruis*, Crane's Louſe
7. *Pediculus Columbæ*, Pigeon's Louſe
8. *Pediculus pluvialis*, Plover's Louſe
9. *Pediculus apis*, Bee's Louſe

GENUS PULEX.

Fig. 10. 10.* *Pulex iritans*, Common Flea, natural ſize, and magnified

GENUS ACARUS.

Fig. 11. *Acarus reduvius*, Tick

GENUS TROMBIDIUM.

Fig. 12. *Trombidium aquaticum*
13. *Trombidium abſtergens*

GENUS HYDRACHNA.

Fig. 14. *Hydrachna geographica*
15. *Hydrachna abſtergens*

GENUS NYMPHION.

169. Lettered ENTOMOLOGY, Order Aptera, Plate I.
Fig. 1. *Phalangium Groſſipes*, Linn. (*Nymphion*, Fabr.)

GENUS PYCNOGONUM.

Fig. 2. *Phalangium balænarum*, Linn. (*Pycnogonum*, Fabr.)
Fig. 3. *Phalangium hirſutum*, Linn. (*Pycnogonum*, Fabr.)

GENUS PHALANGIUM.

Fig. 4, 4. *Phalangium Cancroides*, (*Tarantula*, Linn. Trans. ?) natural ſize, and magnified
5. *Phalangium cornutum*, (*Scorpio cimicoides*, Fabr.)

GENUS TARANTULA.

Fig. 6, 6. *Tarantula reniforme*, male and female
7. *Tarantula caudata*

GENUS ARANEA.

170. Lettered ENTOMOLOGY, Order Aptera, Plate II.
Fig. 1. *Aranea extenſa*
2. *Aranea globoſa*
3. *Aranea bimaculata*
5. *Aranea faſciata*
6. *Aranea angulata*
7. *Aranea Tarantula*
8. *Aranea avicularia*
9. *Aranea maculata*

The Poſition of the Eyes in different Tribes of Spiders.

No. 1. in Aranea extenſa. No. 2. Aranea globoſa. No. 3. Aranea horrida. No. 4. Aranea argentata. No. 5. Aranea faſciata. No. 6. Aranea angulata. No. 7. Aranea Tarantula. No. 8. Aranea avicularia. No. 9. Aranea maculata

PLATE

GENUS SCORPIO.

171. Lettered ENTOMOLOGY, Order Aptera, Plate III.
Fig. 1, 2. *Scorpio afer*, Great Scorpion. Upper Surface, No. 1. Under Surface, No. 2.
3. *Scorpio linearis*, Linear Scorpion. Upper Surface
4. *Scorpio linearis*, Linear Scorpion. Under Surface
5. *Scorpio europæus*, European Scorpion

CRUSTACEA.

GENUS CANCER.

172. Lettered CRUSTACEA, Order Cancer, Plate I.
Fig. 1. *Cancer ruricola*
2. *Cancer fafcicularis*
3. *Cancer Facchino* (*Dorippe Facchino*)
4. *Cancer Dormio* (*Dormio artificiofa*)

173. Lettered CRUSTACEA, Order Cancer, Plate II.
Fig. 5. *Cancer meneftho* (*Portunus meneftho*)
6. *Cancer forceps* (*Portunus forceps*)
7. *Cancer mammillaris* (*Orithyia mammillaris*)
8. *Cancer lunaris* (*Matuta lunaris*)

174. Lettered CRUSTACEA, Genus Cancer, Plate III., IV., V.
Fig. 1. *Cancer depreffus*
2. *Cancer perlatus*
3. *Cancer perfonatus*

GENUS PAGURUS.

175. Lettered CRUSTACEA, Genus Cancer, Plate VII. Entomology
Fig. 3. *Cancer ftrigatus* (*Pagurus ftrigatus*)
5. *Cancer dubius* (*Pagurus dubius*)

176. Lettered CRUSTACEA, Order Cancer, Plate VI.
Fig. 1. *Cancer arrofor* (*Pagurus arrofor*)
2. *Cancer canaliculatus* (*Pagurus canaliculatus*)
3. *Cancer excavatus* (*Pagurus excavatus*)

GENUS ASTACUS.

Fig. 4. *Cancer variegatus* (*Aftacus variegatus*)

175. Lettered CRUSTACEA, Genus Cancer, Plate VII., Entomology
Fig. 7. *Cancer fluviatilis* (*Aftacus fluviatilis*)
4. *Cancer narval* (*Aftacus narval*)

GENUS SQUILLA.

Fig. 2. *Cancer digitalis* (*Squilla digitalis*)

176. Lettered CRUSTACEA, Order Cancer, Plate VI.
Fig. 4. *Cancer ampulla* (*Gammarus ampulla*)
6. *Cancer linearis* (*Gammarus linearis*)
5. *Cancer mantis* (*Gammarellus mantis*)
6. *Cancer fpinofus* (*Gammarellus fpinofus*)
7. *Cancer paludofus* (*Gammarellus paludofus*,) natural fize, and magnified

PLATE
176. Fig. 8. *Cancer linearis* (*Gammarellus linearis*)
9. *Cancer pulex* (*Gammarellus pulex*)

GENUS SCYLLARUS.

175. Lettered CRUSTACEA, Genus Cancer, Plate VII. Entomology
Fig. 7. *Cancer Arctus* (*Scyllarus Arctus*)

GENUS MONOCULUS.

177. Lettered ENTOMOLOGY, Order Aptera, Plate X.
Fig. 1. *Monoculus quadricornis*
2, 2. *Monoculus polyphemus*, Upper Surface and Under Surface

GENUS ONISCUS.

Fig. 3, 3. *Onifcus pfora*, Upper Surface and Under Surface
4. *Onifcus craffipes*
5. *Onifcus Oeftrum*
6. *Onifcus Oceanicus*
7. *Onifcus aquaticus*
8. *Onifcus armadillo*

GENUS SCOLOPENDRA.

Fig. 9. *Scolopendra morfitans*

GENUS JULUS.

Fig. 10. *Julus terreftris*

CLASS VI. *VERMES*.

ORDER INTESTINA.

GENUS ASCARIS.

178. Lettered VERMES, Order Inteftina, Plate I., II., III.
Fig. 1. *Afcaris vermicularis*

GENUS ECHINORYNCHUS.

Fig. 2. *Echinorynchus lucii*
Head magnified *
2. *Echinorynchus candidus*
Head magnified *
3. *Echinorynchus coryphænæ*
4. *Echinorynchus lineolatus*
Head magnified *
5. *Echinorynchus attenuatus*, natural fize, and magnified
6. *Echinorynchus attenuatus*, natural fize, adhering to the fkin of a fifh
7. *Echinorynchus alba*
8. *Echinorynchus brunnea*

GENUS LINGULATA.

9. *Lingulata abrupta*, Upper and Under Surface

GENUS FASCIOLA.

Fig. 2. *Fafciola binodis*, the minute Figures which accompany the larger ones denote the natural Size
3. *Fafciola Æglefini*, Ditto

PLATE

178. Fig. 4. *Fasciola Scorpii*, the minute Figures which accompany the larger ones denote the natural Size
5. *Fasciola lucioperca*, Ditto
6. *Fasciola bramæ*, Ditto

GENUS TÆNIA.'

179. Lettered VERMES, Order Inteſtina, Plate V.

Fig. 1. *Tænia ſolium*, grouped into folds in order to include the whole animal, which is of extreme length, within the limits of the Plate. Found in the human body
2. The head, natural ſize, of a ſpecimen twenty feet in length
3. Head magnified
7. Two joints retaining the external ſkin, and ſhewing the alternate diſpoſition of the oſcula along the edges of the joints as they uſually appear
8. Two joints ſhewing their lateral diſpoſition when they occur on both the margins of each joint, which ſometimes happens
4. A portion of the joints of the natural ſize diveſted of the outer ſkin, and diſcloſing more fully the alternate lateral oſcula, together with the alimentary canals, as they communicate from one joint to the other
5. The middle ſyſtem of veſſels illuſtrated in another portion of four joints
6. Another portion deprived of the outer coating, and diſplaying all the canals in their relative ſituation. Vide *Carliſle in Linn. Tranſ. v.* 2.

Tænia lata. Carliſle in Linn. Tranſ. 2.—*Tænia oſculis lateralibus ſolitariis*, Linn. Amoen. Acad. 2.?

10. A portion of ſeveral joints exhibiting the oſcula, which are diſpoſed in a ſingle ſeries down the center of the joints
11. Another portion diveſted of the outer coating, and ſhewing the ſtelliform veſſels down the center within, and alſo the lateral alimentary canals. Found in the inteſtines of mankind
9. *Tænia canina*, head, and a portion of the body, conſiſting of the five firſt joints. Found in the dog.

GENUS GORDIUS.

180. Lettered VERMES, Genus Gordius, Plate IV.

Fig. 1. *Gordius aquaticus*

GENUS LUMBRICUS.

Fig. 2, 3. *Lumbricus terreſtris*

GENUS HIRUDO.

Fig. 4. *Hirudo muricata*
5. *Hirudo geometra*. The ſmaller figures at No. 1. denote the eggs and natural ſize of the animal: No. 4. magnified ſhews the animal affixed by the broad pedal-like tail with the body extended horizontally: No. 3. the ſame contracting into an arched

PLATE

180. Fig. 5. form: No 2. when moſt contracted, arched, and elevated, preparatory to walking, which it does ſomewhat in the manner of the larvæ of the Geometra tribe of moths, or as uſually deſcribed as if meaſuring the ground like a pair of compaſſes.

GENUS PLANARIA.

Fig. 6. *Planaria crenata*. No. 1, 2, 3, 4, 5, ſhews various poſitions and contractions of this animal

GENUS SIPHUNCULUS.

Fig. 7. *Siphunculus nudus*

ORDER MOLLUSCA

GENUS LIMAX.

Fig. 8. *Limax ater*
9. *Limax maximus*

GENUS ONCHIDIUM.

181. Lettered VERMES, Order Molluſca, Plate VII.

Fig. 1, 1. *Onchidium typhæ*

GENUS LAPLISIA.

Fig. 2. *Lapliſia depilans*

GENUS DORIS.

Fig. 3. *Doris argo*
4. *Doris radiata*
5. *Doris papilloſa*

GENUS APHRODITA.

Fig. 6. *Aphrodita aculeata*. No. 6. † ſmall, upper ſurface, right-hand figure
No. 6. † ditto, under ſurface, left-hand figure
No. 6. large ſize
7. *Aphrodita ſquamata*

GENUS NAIS.

182. Lettered VERMES, Genus Nais, Plate V.

Fig. 1, 2, 3, 4. *Nais ſerpentina*, highly magnified, the natural ſize being three quarters of an inch in length, or not exceeding that of the cluſter ſhewn on the duckweed, fig. 5.
5, 6, 7, 8, 9, 10, 11. *Nais vermicularis*, highly magnified, natural ſize one-tenth of an inch
12, 13. *Nais proboſcidea*, highly magnified, natural ſize three-fourths of an inch

GENUS ACTINIA.

183. Lettered VERMES, Genus Actinia, Plate II.

Fig. 1. *Actinia dianthus*
2. *Actinia cereus*

GENUS HOLOTHURIA.

184. Lettered ZOOLOGY, Claſs Vermes, Plate I. of Molluſca

Fig. 1. *Holothuria elegans*
2. *Holothuria pentactes*

PLATE

184. Fig. 3, 4. *Holothuria fuſus*
5. *Holothuria pencillus*
6, 7, 8. *Holothuria ſquamata*. No. 1. upper ſurface: No. 2. lower ſurface, in a quieſcent ſtate: No. 3. with the tentacula expanded
9, 10. *Holothuria inhærens*, No. 1. with tentacula expanded: No. 2. tentacula retracted

GENUS SEPIA.

185. Lettered VERMES, Order Molluſca, Plate VI.

Fig. 1. *Sepia octopus*
2, 3. *Sepia media*. No. 1. upper ſurface: No. 2. under ſurface

GENUS MEDUSA.

186. Lettered VERMES, Order Molluſca, Plate IV.

Fig. 1, 2. *Meduſa pulmo*, No. 1. † upper ſurface, No. 1. under ſurface
3. *Meduſa campanula*

GENUS ASTERIAS.

187. Lettered VERMEOLOGY, Vermes, Molluſca, Plate III. of Aſterias.

Fig. 1. *Aſterias Caput meduſæ*
2. *Aſterias pectinata*
3. *Aſterias ſphærulata*
4. *Aſterias ophiura*, *a* upper ſurface, *b* under ſurface

ORDER TESTACEA.

GENUS CHITON.

188. Lettered CONCHOLOGY, Genus Chiton, Plate IX.

Fig. 1, 2. *Chiton arundo*
Chiton aculeatus, No. 1. upper ſurface, No. 2. inſide
3. *Chiton ſquamoſus*
4. *Chiton olivaceus*, No. 1. outſide, No. 2. inſide, ſmall

GENUS LEPAS.

189. Lettered CONCHOLOGY, Genus Lepas, Plate XIII.

Fig. 1. *Lepas anatifera*
2. *Lepas anſeriſera*

GENUS PHOLAS.

190. Lettered CONCHOLOGY, Genus Pholas, Plate VIII.

Fig. 1, 2, 3. *Pholas dactylus*, No. 1. ſide view; No. 2. the two lateral valves united at the hinge; No. 3. inſide of one of the lateral valves
4. *Pholas coſtata*
5, 6, 7. *Pholas ſtriata*, No. 1., the loweſt figure, exhibits a ſide view of this ſhell, as compoſed of ſeveral valves; No. 2., the uppermoſt figure, ſhews the teſtaceous valves at the top or hinge ſide of the ſhell; No. 3. the manner in which this ſpecies of Pholas buries itſelf into ſhips' bottoms or other timber

PLATE

GENUS MYA.

193. Lettered CONCHOLOGY, Genus Mya, Plate XI. B.

Fig. 1. *Mya truncata*

GENUS SOLEN.

191. Lettered CONCHOLOGY, Genus Solen, Plate (no number)

Fig. 1. *Solen grandis*, the loweſt figure in the plate
2, 3. *Solen radiatus*, No. 1. outſide, No. 2. inſide, ſmaller ſhell
4. *Solen ſtrigilatus*
5. *Solen vagina*, No. 1. outſide, No. 2. of a younger ſhell, ſhewing the teeth of the hinge
6. *Solen enſis*

GENUS TELLINA.

192. Lettered CONCHOLOGY, Genus Tellina, Plate V.

Fig. 1, 1. *Tellina radiata*, No. 1. outſide, No. 2. inſide (*Donov. Brit. Shells*)
2, 2. *Tellina ſqualida*, No. 1. outſide, No. 2. inſide (*Donov. Brit. Shells*)
3, 3. *Tellina fabula*, one valve of this Shell is marked externally with very fine oblique ſubflexuous ſtriæ, the other ſmooth or deſtitute of ſtriæ (*Donov. Brit. Shells*)
4. *Tellina bimaculata*, inſide and outſide (*Donov. Brit. Shells*)

GENUS CARDIUM.

Fig. 5. *Cardium aculeatum*
6. *Cardium lævigatum*
7. *Cardium edule*
8. *Cardium medium*

GENUS MACTRA.

193. Lettered CONCHOLOGY, Genus Mya, &c. Plate XI. B.

Fig. 2. *Mactra radiata*

GENUS DONAX.

Fig. 3. *Donax trunculus*

GENUS VENUS.

Fig. 4. *Venus iſlandica*, No. 1. outſide, No. 2. inſide

GENUS CHAMA.

Fig. 5. *Chama Cor*

GENUS SPONDYLUS.

194. Lettered CONCHOLOGY, Genus Spondylus, Plate XVII.

Fig. 1, 2, 3. *Spondylus gædaropus*. Upper figure on the left hand the uſual ſize; upper figure on the right ſide ſhews the inſide of both valves; the lower figure a ſuperb ſpecimen, in point of magnitude, and perfection of the elongated ſpines. *Cabinet of Alexander M'Leay, Eſq.*

PLATE

GENUS ARCA.

195. Lettered CONCHOLOGY, Genus Arca, Plate VIII.

Fig. 1, 2. *Arca tortuofa*, No. 1. outfide, lower figure. No. 2. infide
3, 4. *Arca fenilis*, No. 1. the outfide, lower figure, No. 2. infide, the upper figure
5, 6. *Arca nodulofa*, No. 1. outfide, lower figure, No. 2. infide
7. *Arca nebulofa*

GENUS OSTREA.

Pecten, or *Scallops*.

196. Lettered CONCHOLOGY, Genus Oftrea, Plate XII.

Fig. 1. *Oftrea Jacobæa*
2. *Oftrea fubrufa*
3. *Oftrea nodofa*
4. *Oftrea lineata*
5. *Oftrea obfcura*
6. *Oftrea varia*, various fizes
7. *Oftrea obfoleta*, nat. fize (*Donov. Brit. Shells*)

GENUS MYTILUS.

193. Lettered CONCHOLOGY, Genus Mya, &c. Plate XI. B.

Fig. 6, 6. *Mytilus edulis*, var. *purpureus*, (*Donov. Brit. Shells*,) infide and outfide

GENUS PINNA.

197. Lettered CONCHOLOGY, Genus Pinna, Plate VII.

Fig. 1. *Pinna nigra*, infide and outfide, fmall fize
2 *Pinna muricata*, fhewing the byffus or beard
3. *Pinna rubra*, ditto
4. *Pinna fragilis*

UNIVALVES.

GENUS ARGONAUTA.

198. Lettered CONCHOLOGY, Order Univalve, Plate IV.

Fig. 1. *Argonauta argo*, Paperfailor Shell
2. *Argonauta vitreus*, called the Glaffy Nautilus, a fhell of unufual rarity

GENUS NAUTILUS.

Fig. 3. *Nautilus Pompilius*, Great Nautilus.
4. No. 1. the largeft of the ordinary fize; No. 2. young; No. 3. fection of the young fhell, fhewing the chambers and the fiphunculus

GENUS CONUS.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 1. *Conus Ammiralis*, var. *Banded Cedo nulli cone*
2. *Conus Ammiralis*, var. *Curaçao Cedo nulli cone*
3. *Conus Ammiralis*, var. *Southern Cedo nulli cone*
4. *Conus Ammiralis*, var. *Seba's Cedo nulli cone*
5. *Conus Ammiralis*, var. *Marbled Cedo nulli cone*

* All thefe varieties are efteemed valuable: fome few bear an exceffive price; that known by the name of Lyonet's Shell was reputed to be worth one hundred pounds fterling, or as it has been otherwife ftated a much higher fum. The figure in the upper part of the plate reprefents the moft uncommon kind of Cedo Nulli

GENUS CYPRÆA.

200. Lettered CONCHOLOGY, Genus Cypræa, Plate XIV.

Fig. 1, 1. *Cypræa tigris*, upper and under furface
2. *Cypræa aurora*, Aurora or Orange Cowry of the South Seas
3. *Cypræa argus*
4. *Cypræa Arabica*
5. *Cypræa annulata*, upper and under furface
6. *Cypræa fafciata*
7. *Cypræa maculata*
8. *Cypræa vefpa*
9, 9. *Cypræa monetas*, upper and under furface
10, 10. *Cypræa pediculus*

GENUS BULLA.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 6, 6. *Bulla lignaria*, No. 1. the outfide. No. 2., the lower figure, fhews the mouth

GENUS VOLUTA.

201. Lettered CONCHOLOGY, Genus Voluta, Plate I.

Fig. 1. *Voluta tornatilis*
2. *Voluta porphyria*
3. *Voluta oliva*
4. *Voluta pallida*
5, 5. *Voluta papalis*, No. 1. the back, No. 2. fhews the mouth
6. *Voluta epifcopalis*
7. *Voluta Æthiopica*
8. *Voluta indica*

GENUS BUCCINUM.

202. Lettered CONCHOLOGY, Order Voluta, &c. Plate II.

Fig. 1. *Buccinum harpa*
2. *Buccinum patulum*
3. *Buccinum maculatum*
4. *Buccinum ftrigillatum*

GENUS STROMBUS.

Fig. 5. *Strombus chiagra*
6. *Strombus pugilis*
7. *Strombus lentiginofus*
8. *Strombus urceus*

GENUS MUREX.

203. Lettered CONCHOLOGY, Order Univalve, Plate III.

Fig. 1. *Murex hauftellum*
2. *Murex longicauda*
3. *Murex muricatus*
4. *Murex tulipa*

GENUS TROCHUS.

Fig. 5. *Trochus niloticus*
6, 6. *Trochus perfpectivus*. No. 1., right-hand figure, fhews the convex furface; No. 2. left-hand, the concave furface or under fide
7. *Trochus pictus*
8. *Trochus turritus*

PLATE

GENUS TURBO.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 7, 7. *Turbo trilineatus*, (*Donov. Brit. Shells*) ſmalleſt figure ſhews the natural ſize

8, 8. *Turbo fuſiformis*, (*Donov. Brit. Shells*) ditto

GENUS HELIX.

Fig. 9, 9. *Helix hortenſis*

GENUS NERITA.

Fig. 10, 10, 10. *Nerita carena*, the figure on the left hand exhibits the carinated umbilicus

GENUS HALIOTIS.

204. Lettered CONCHOLOGY, Genus Haliotis, Plate VI.

Fig. 1, 1. *Haliotis Aſinum*. The lower figure ſhews the outſide or upper ſurface of the ſhell, as the animal moves; the upper figure exhibits the hollow of the ſhell, when deprived of the animal

2. *Haliotis tuberculata*

3, 4. *Haliotis ſpadicea*, outſide and inſide

5. *Haliotis lævigata*

GENUS PATELLA.

* *Shell valved within.*

205. Lettered CONCHOLOGY, Genus Patella, Plate (blank)

Fig. 1, 1. *Patella equeſtris*. The upper figure ſhews the outſide of the ſhell, which is rugoſe; the lower one the inſide, which is ſmooth, and furniſhed with an internal lip or valve in the hollow center

2, 2. *Patella fornicata*. The figure on the left hand exhibits the outſide; that on the right hand the inſide, with the broad inner lip or valve

3, 3. *Patella ſtriata*. No. 1., the lower figure, ſhews the ſtriated outer ſurface; No. 2., the upper figure, the concave hollow beneath, with the inner lip or valve

* * *Shell at the Apex perforated.*

4, 4. *Patella fiſſura*

5. *Patella fiſſurella*

6. *Patella græca*

7. *Patella raaiata*

8. *Patella lobata*

9. *Patella nimboſa*. The upper figure ſhews the outſide ſurface; the lower one the hollow cavity, or inſide

*** *Apex of the Shell entire.*

206. Lettered CONCHOLOGY, Genus Patella, Plate XVI.

Fig. 1. *Patella granatina*. The upper figure ſhews the outſide; the lower one the concave, or inſide

PLATE

206. Fig. 2, 2, *Patella Auricula*, two varieties. The figure in the middle of the left-hand margin ſhews the outer ſurface; the others the concavity

3. *Patella vulgata*, var.

4. *Patella ſtrigata*

5. *Patella ſagittata*

6. *Patella virgata*

7. *Patella anatina*

GENUS DENTALIUM.

207. Lettered CONCHOLOGY, Genus Dentalium, Plat (blank)

Fig. 1. *Dentalium elephantium*

GENUS SERPULA.

Fig. 2. *Serpula triquetra*, various examples adhering to a Pecten, (*Oſtrea*)

3. *Serpula triquetra*, ditto, adhering to the valve of a Mytilus

3. *Serpula vermicularis*, intermixed with S. triquetra

4. *Serpula vermicularis*, detached

5. *Serpula filiformis*

6. *Serpula reticulata*

7. *Serpula papilloſa*

8. *Serpula tortuoſa*

9. *Serpula anguina*

10. *Serpula penis*

GENUS TEREDO.

208. Lettered CONCHOLOGY, Genus Teredo, Plate X.

Fig. 1. *Teredo navalis*, exhibiting the manner in which the timbers of ſhips' bottoms are ſometimes perforated by this deſtructive creature

2. *Teredo navalis*, a ſingle ſhell detached from the timber, is ſhewn at the bottom of the Plate

GENUS SABELLA.

Fig. 3. *Sabella belgica*

4. *Sabella alveolata*

ELEMENTAYY PLATES OF CONCHOLOGY.

UNIVALVES.

209. Lettered CONCHOLOGY, Elementary Plate I.

Fig. 1, 1, 1. The part denominated the Baſe of an univalve ſhell, illuſtrated by examples ſelected from different Genera, as in *Dentalium*, *Turbo*

2, 2, 2. the Apex, as in *Dentalium* and *Patella*

3, 3. the Front, as in *Turbo*, *Buccinum*

4, 4. the Back, as in *Turbo*, *Helix*

5, 5. the Sides, as in *Turbo*, *Buccinum*

6, 6, 6. the Body, as in *Helix*, *Murex*

7. the Belly, as in *Nerita*

8. the Whorl, as in *Turbo*

9, 9, 9. the Spire, as in *Turbo*, *Murex*

10, 10. the Sutures of the Spire or Whorl, as in *Murex*, *Turbo*

PLATE

210. Lettered CONCHOLOGY, Elementary Plate II.

Fig. 11. The part denominated the Pillar or Columella, as in *Murex*
12, 12, 12. the Aperture, as in *Murex*, *Helix*, *Nerita*
13, 13, 13. the Lip, as in *Voluta*
14. the Beak, as in *Murex*
15. the Canal, as in *Murex*
16, 16. the Umbilicus, as in *Trochus*, *Nerita*

211. Lettered CONCHOLOGY, Elementary Plate III.

Fig. 17, 17. The part denominated the Operculum, as in *Trochus*, *Murex*
18. the Involuted Spire, as in *Nautilus*
19, 19, 19. the Chambers, as in *Nautilus*, the Chambered Patella, and the Ammonite, (found foſſil)
20. the Siphunculus, as in *Nautilus*
21. the Epidermis, as in *Turbo*

BIVALVES.

Fig. 22. The part denominated the Baſe of a Bivalve Shell, as in *Venus*
23. the Summit, as in *Patella*
24, 24. the Beak, as in *Chama*, (Cor.) *Mytilus*
25. the Sides, as in *Venus*

212. Lettered CONCHOLOGY, Elementary Plate IV.

Fig. 26. The part denominated the Margin, or Limb, as in *Tellina*, (cornea)
27, 27. the Diſk, as in *Venus*, *Tellina*
29, 29. the Poſterior Slope, as in *Mactra*, *Tellina*, *Venus*
30. the Lunule, as in *Venus*, *Tellina*, (a. & b.)
31, 31. the Cartilage, or Hinge, as in *Tellina*, *Venus*
32, 32. the Ears, as in *Pecten*, (*Oſtrea*, Linn.)
33, 33. the Ligament Perforation, (Aperture in the upper valve of the Shell through which the ligament of the animal paſſes, by which it adheres to extraneous ſubſtances, as in *Anomia*)

213. Lettered CONCHOLOGY, Elementary Plate V.

Fig. 34, 34. The Length and Breadth of a Bivalve Shell, as in *Solen*, *Mytilus*
35. the Inſide of a Bivalve Shell, as in *Mytilus*, (*rugoſus*)
36. the Hinge, Suture, and Proceſs. Denticlated ſuture, as in *Arca*. Spoon-ſhaped proceſs, as in *Mya*, (*Prætenius*, *Donov. Brit. Shells*)

PLATE

213. Fig. 37. The part denominated the Cicatrix, Impreſſion of the Spaces to which the animal-inhabitant of the Shell adheres
38, 38. the Byſſus, or Beard, as in *Mytilus*

MULTIVALVES.

Fig. 39, 39. The part denominated the Baſe of a Multivalve Shell, as in *Lepas*
40, 40. the Ligament, as in *Lepas*, (*anatifera*)
41, 41. the Operculum, as in *Lepas*, (*Balanus vulgaris*)

*** *Vide article* CONCHOLOGY, *which theſe Elementary Plates are intended to illuſtrate.*

ORDER 4. ZOOPHYTES.

GENUS TUBIPORA.

214. Lettered ZOOPHYTES, Genus Tubipora, Plate I.

Fig. 1. *Tubipora muſica*

GENUS MADREPORA.

* *Conſiſting of one Star.*

Fig. 2. *Madrepora fungites*
3. *Madrepora pileus*
4. *Madrepora Agathus*
5. *Madrepora foliaceus*

*** *With numerous united Stars.*

215. Lettered ZOOPHYTES, Plate II.

Fig. 1. *Madrepora labyrinthica*
2. *Madrepora phrygia*
3. *Madrepora gyroſa*
4. *Madrepora areolata*

**** *Aggregated diſtinct Stars and porulous tuberculated prominent Undulations.*

Fig. 5. *Madrepora ananas*

***** *Ramoſe, with diſtinct Stars, and tuberculated porulous Undulations.*

Fig. 6. *Madrepora porites*

GENUS ISIS.

216. Lettered ZOOPHYTES, Genus Iſis, Plate I.

Fig. 1. *Iſis Hippuris*
2. *Iſis coccinea*

GENUS ANTIPATHES.

Fig. 3. *Antipathes ſubpinnata*
4. *Antipathes Myriophylla*

GENUS GORGONIA.

217. Lettered ZOOPHYTES, Genus Gorgonia, Plate II.

Fig. 1. *Gorgonia lepadifera*
2. *Gorgonia ceratophyta*
3. *Gorgonia americana*
4. *Gorgonia exſerta*

PLATE

218. Lettered ZOOPHYTES, Genus Gorgonia, Plate I.

Fig. 1. *Gorgonia nobilis*, Red Coral, or Noble Coral
2. Part of the branch of Gorgonia Nobilis magnified, and exhibiting the animals
3. *Gorgonia umbraculum*
4. Portion of a branch magnified
5. *Gorgonia reticulata*
6. Portion of a branch magnified

GENUS ALCYONIUM.

219. Lettered ZOOPHYTES, Genus Alcyonium, Plate III.

Fig. 1. *Alcyonium gorgonoides*

GENUS SPONGIA.

Fig. 2. *Spongia tubulofa*
3. *Spongia palmata*
4. *Spongia protifera*
5. *Spongia coronata*

GENUS FLUSTRA.

220. Lettered VERMES, Order Zoophytes, Genus Fluftra, Plate VIII.

Fig. 1. *Fluftra foliacea*
2. *Fluftra bombycina*
2.* A portion of a branch magnified to fhew the cells
3. *Fluftra carbafea*
3.* Magnified to fhew the cells
4. *Fluftra verticillata*
4.* Magnified to fhew the cells

GENUS TUBULARIA.

221. Lettered VERMES, Order Zoophytes, Genus Tubularia, Plate I.

Fig. 1. *Tubularia magnifica*, Magnificent Tubularia, or Animal Flower
The figures in this Plate difplay the animal in its young and full-grown ftate, and exhibit likewife the full expanfion of the tentacula

GENUS CORALLINA.

222. Lettered ZOOPHYTES, Genus Corallina, Plate VI. & VII.

Fig. 1. *Corallina officinalis*
2. One of the branches magnified
3. *Corallina fquamata*
4. A branch magnified
5. *Corallina incraffata*
6. *Corallina opuntia*
7. *Corallina corniculata*
8. A branch magnified

GENUS SERTULARIA.

223. Lettered VERMES, Order Zoophytes, Genus Sertularia, Plate VIII.

Fig. 1. *Sertularia frutefcens*
1.*A branch magnified

PLATE

223. Fig. 2. *Sertularia quadridentata*
2.*A branch magnified
3. *Sertularia pinafter*
3.*A branch magnified
4. *Sertularia filicula*
4.*A branch magnified

GENUS HYDRA.

224. Lettered VERMES, Order Zoophytes, Genus Hydra, Plate V.

Fig. 1. *Hydra viridis*, Green Polype
2. *Hydra grifea*, Grey Polype
3. *Hydra fufca*, Brown Polype
4, 5, 6. Clufters of the different fpecies, as they live at the roots of aquatic plants immerfed in water

* *Thofe marked with a ftar are magnified.*

ORDER V.

INFUSORIA.

GENUS BRACHIONUS.

225. Lettered ANIMALCULES, Clafs Vermes, Plate I.

Fig. 1—6. *Brachionus urceolaris*, in various ftates of expanfion and retraction
7. *Brachionus ftriatus*
8. *Brachionus tripus*
9. *Brachionus uncinnatus*
10. *Brachionus quadridentatus*

GENUS VORTICELLA.

Fig. 11. *Vorticella polypina*
12. *Vorticella polypina*, a clufter magnified
13. *Vorticella anaftatica*, the group fhewing the manner in which they aggregate in clufters; and alfo figures of the fingle-headed, double-headed, and quadruple-headed, feparate
14. *Vorticella pyraria*, a clufter
15. *Vorticella opercularia*, a group, fhewing the ftelliform animal expanded
16. *Vorticella umbellaria*
17. *Vorticella digitalis*
18. *Vorticella nebulifera*

GENUS TRICHODA.

226. Lettered VERMES INFUSORIA, Plate II.

Fig. 1, 1. *Trichoda fol*, under two appearances
2, 2, 2. *Trichoda cometa*, three appearances
3, 3. *Trichoda bomba*, two appearances
4. *Trichoda trigona*
5. *Trichoda anas*
6. *Trichoda urnula*
7. *Trichoda proteus*

GENUS CERCARIA.

Fig. 8, 8, 8. *Cercaria Lemna*, in the entirely expanded pofition it affumes when moving, and two others
9, 9. *Cercaria inquieta*, extended and fubretracted

PLATE

226. Fig. 10. *Cercaria lupus*
11. *Cercaria podura*

GENUS KOLPODA.

Fig. 12. *Kolpoda pyrum*

GENUS PARAMECIUM.

Fig. 13. *Paramecium oviferum*
14. *Paramecium chryfolis*
15. *Paramecium marginatus*

GENUS VIBRIO.

Fig. 16. *Vibrio anguillula*
17. *Vibrio glutinis*, the fmaller figures denote the natural fize
18, 18. *Vibrio anfer*, in two pofitions
19. *Vibrio olor*
20. *Vibrio lunula*
21, 21. *Vibrio paxilifer*, varioufly connected

GENUS LEUCOPHRA.

Fig. 22. *Leucophra cornuta*

GENUS ENCHELIS.

Fig. 23. *Enchelis punctifera*
24, 24. *Enchelis retrograda*, two figures
25. *Enchelis truncus*
26. *Enchelis caudata*

GENUS VOLVOX.

Fig. 27. *Volvox globator*
Obf. All the Vermes infuforia are microfcopic objects

Addenda to the Zoology.

227. Lettered LIGHT, Luminous Animals

Luminous Animals, *vide* article LIGHT

Fig. 1. *Nereis noctiluca*, difcovered by Vianelli, (nat. fize)
2. The fame, greatly magnified
3. A luminous infect, difcovered by Riville
4. *Cancer fulgens*, difcovered by Sir Jofeph Banks, (natural fize)
5. *Limulus noctilucus*, difcovered by Captain Horfburgh, greatly magnified
6. *Medufa pullucens*, difcovered by Sir Jofeph Banks, fhewn lefs than the natural fize
7. *Pyrofoma atlanticum*, lately difcovered by Peron
8. *Medufa lucida*, of Dr. Macartney, the largeft he met with
9. *Beroe fulgens*, of Dr. Macartney, the ufual fize
10. *Medufa fcintillans*, of Dr. Macartney, natural fize
11. The fame, highly magnified
12. A luminous Animalcule, difcovered by Mr. Forfter
13. The fame, highly magnified
14. An enlarged view of the inferior furface of the abdomen in the *Lampyris lucida*, after the integuments had been removed

PLATE

227. Fig. 14. *a.a.a.* The three maffes of luminous fubftance, which are applied to the three laft rings of the abdomen

b.b.b. The arrangement of the cellular or interftitial fubftance on the other abdominal rings, which give the pale colour to the whole belly of the infect

15. Diffection of the common Glow-Worm, expofing the facs of luminous matter *in fitu*, on the laft ring of the belly. *a.* The fac on one fide
16. One of the facs of the Glow-Worm taken out and very highly magnified. *a.* The external part of the fac, compofed of an interweaving of a fpiral fibre. *b.* The luminous fubftance feen at one end
17. *Elater noctilucus*, with a portion of the fhell of the thorax removed to uncover one of the organs of light, of which there are two, one being fituated on each fide, at the pofterior part of the thorax. *a.* The yellow tranfparent fpot of the thorax. *b.* The oval mafs of luminous fubftance furrounded by an irradiation of the interftitial fubftance. *c.* The ends of the mufcles which are on the infide of the thorax
18. The luminous apparatus of the *elater noctilucus*, confiderably magnified. *a.* The radiated appearance of the interftitial fubftance around the oval mafs of luminous fubftance. *b.* The arrangement of that fubftance when it paffes down between the mufcles. *c.* The ends of the mufcles of the back. *d.* The fhell of the thorax
19. *Elator ignitus*. *a.* The yellow part of the thorax. *b.* The fmall mafs of luminous fubftance, feen on removal of the fhell of the thorax

Obf. The preceding objects were thofe appointed by Dr. Macartney for the explanation of his article on Luminous Animals, which will be found placed under the leading article, LIGHT.

In addition to thofe, we have, ourfelves, conceived the propriety of introducing another figure of the Nereis genus, that of Vianelli being, confeffedly, very doubtful. This animal is, therefore, not merely introduced by us as a fpecies highly phofphorefcent, under certain circumftances, in common with moft others of its tribe, but in order likewife to convey a more accurate idea of the Nereis genus, than the figure copied from Vianelli will afford. The fpecies we have introduced, is the Nereis cærulea of fome authors, fanguinea of others; and is, beyond any doubt, a genuine Nereis of the Linnæan Syftem.

The figure by Vianelli, is contained in a fmall tract written in the Italian language, entitled "*Nuove fcoperte intorno le luci notturne dell' acqua marina;*" and which, befides being moft evidently depicted from a very mutilated object, is entirely different from that included in the third volume of *Amænitates Academicæ*, which Linnæus himfelf gave very fhortly afterwards as the fame animal: and even this latter, like that of Vianelli, if we miftake not, muft have been delineated likewife from

PLATE

an imperfect animal. We have, indeed, a ſtrong ſuſpicion, that the animal repreſented by Vianelli, cannot be of the Nereis genus.

In concluſion of this note, it may not be amiſs to add, that no animal has been more indefinitely deſcribed than the Nereis noctiluca. The only ſpecific character aſſigned to it in the laſt edition of *Syſtema Naturæ* cura a Gmelin, is *Corpore vix conſpicuo*, which being applicable to every minor ſpecies, can be no criterion of the individual kind that author had intended; and the ſame vague character occurs again in *Mull. Zool. Prodr.* n. 2623. In the twelfth edition of *Linn. Syſt. Nat.* the body of Nereis noctiluca is deſcribed as conſiſting of twenty-three joints, which is the number repreſented in the Plate inſerted in *Amoen. Acad. t.* 3. but this diſtinction is totally at variance with the ſubject of Vianelli's tract; for in that figure there are no more than about eleven joints in the body, inſtead of the twenty-three which Linnæus has deſcribed.

BOTANY.

Illuſtration of the Twenty-four Linnæan Claſſes, according to the Number of the Stamina.

228. Lettered BOTANY, Plate II.

Fig. 1. Claſs 1. *Monandria*, one ſtamen, as in *Salicornia*, *Callitriche*, &c.
2. 2. *Diandria*, two ſtamens, as in *Veronica*, &c.
3. 3. *Triandria*, three ſtamens, as in *Hordeum*, *Agroſtis*, &c.
4. 4. *Tetrandria*, four ſtamens, as in *Ilex*, &c.
5. 5. *Pentandria*, five ſtamens, as in *Borago*, *Primula*, &c.
6. 6. *Hexandria*, ſix ſtamens, as in *Allium*, *Erioſpermum*, *Ornithogalum*, &c.
7. 7. *Heptandria*, ſeven ſtamens. *Trientalis*, *Diſandra*, *Æſculus*, *Petrocarya*, *Pancovia*, and *Joneſia* are of this claſs
8. 8. *Octandria*, eight ſtamens, as in *Epilobium*, *Œnothera*, &c.
9. 9. *Enneandria*, nine ſtamens, as in *Butomus*
10. 10. *Decandria*, ten ſtamens, as in *Sedum*
11. 11. *Dodecandria*, twelve ſtamens, as in *Sempervivum*; above twelve, and leſs than twenty ſtamens, as in ſome other genera
12. 12. *Icoſandria*, twenty or more ſtamens inſerted in the calyx, as in *Meſpilus*, *Pyrus*, and ſome other fruit-bearing plants, including *Fragaria*, *Ribes*, &c.

229. Lettered BOTANY, Plate III.

Fig. 13. Claſs 13. *Polyandria*, many ſtamens, and inſerted into the receptacle or baſe of the flowers, as *Papaver* (poppy), *Trollius* (great butter-cup), *Ranunculus*, &c.

PLATE

229. Fig. 14. Claſs 14. *Didynamia*, ſtamens two long, two ſhorter, as in *Lamium*, or dead-nettle, &c.
15. 15. *Tetradynamia*, ſtamens four long and two ſhorter, as in *Cheiranthus*, or ſtock gilly-flower, *Sinapis*, *Braſſica*, &c.
16. 16. *Monadelphia*, ſtamens united by their filaments into a kind of tube, as in *Malva*
17. 17. *Diadelphia*, ſtamens united into two diſtinct parcels or ſets, as in *Piſum*, *Lathyrus*, *Ervum*, &c.
18. 18. *Polyadelphia*, ſtamens united into more than two diſtinct parcels or ſets, as in *Hypericum* (St. John's wort)
19. 19. *Syngeneſia*, anthers united into a cylinder, flowers compound, as in *Leontodon* (dandelion), &c.
20. 20. *Gynandria*, ſtamens united with or growing out of the petals, as in *Orchis* (bee-flower)
21. 21. *Monoecia*, ſtamens and piſtils in ſeparate flowers on the ſame plant, as in *Zannichellia*, *Chara*, &c.
22. 22. *Dioecia*, male and female flowers on diſtinct plants, as in *Salix*, the willow
23. 23. *Polygamia*, male or female flowers, or both, with hermaphrodite flowers on the ſame or on different plants, as in *Valantia*, *Brabeium*, *Parietaria*, &c.
24. 24. *Cryptogamia*, fructification concealed, or not diſtinctly aſcertained

Illuſtration of the Linnæan Orders of Botany, as eſtabliſhed upon the Number of the Piſtils.

230. Lettered BOTANY, Orders, Plate IV.

Fig. 1. *Monogynia*, one ſtyle or ſtigma (with five ſtamens), as in a moſt extenſive number of plants, among which are *Heliotropium*, *Anchuſa*, *Borago*, &c.
2. *Digynia*, two ſtyles (with ten ſtamens), as in *Chryſoſplenium*, *Metella*, *Scleranthus*
3. *Trigynia*, three ſtyles (with ten ſtamens), as in *Silene*, *Stellaria*, &c.
4. *Tetragynia*, four ſtyles, with four ſtamens, as in *Ruppia*, *Potamogeton*, *Sagina*, &c.; with five ſtamens, as *Parnaſſia*, &c.; with ſix ſtamens, as in *Petiveria*
5. *Pentagynia*, five ſtyles (with ten ſtamens), as in *Oxalis*, *Suriana*, *Lychnis*, &c.
6. *Hexagynia*, ſix ſtyles, as in *Butomus*
7. *Heptagynia*, ſeven ſtyles (with ſeven ſtamens), as in *Septas*
8. *Decagynia*, ten ſtyles (with ten ſtamens), as in *Neurada* and *Phytolacca*
9. *Dodecagynia*, twelve ſtyles (with twelve ſtamens), as in *Sempervivum*
10. *Polygamia*, many ſtyles, as in the 1ſt. 2d. 3d. and 4th. order of Claſs Syngeneſia
11. *Gymnoſpermia*, naked ſeeds, as in *Ajuga*, *Teucrium*, *Satureja*, &c.

PLATE

230. Fig. 12. *Angiofpermia*, feeds inclofed in a pericarpium or feed-veffel, as in many genera, *Anterrhinum*, *Cybaria*, &c.

231. Lettered BOTANY, Orders, Plate V.

Fig. 13. *Siliculofa*, pericarpium a filicula, as in *Thalafpi* (fhepherd's purfe), *Draba*, &c.

14. *Siliquofa*, pericarpium a filiqua, as in *Raphanus*, *Sinapis*, *Braffica*, &c.

15. *Polygamia Æqualis*, flowers compound, all the florets hermaphrodite, as in *Leontodon*, *Hieracium*, &c.

16. *Polygamia Superflua*, florets of the difk hermaphrodite, thofe of the radius female, as in *Bellis* (garden daify), *Tuffilago*, *Senecio*, &c.

17. *Polygamia Neceffaria*, flowers or florets of the difk male, thofe of the radius female, as in *Calendula*, *Chryfogonum*

18. *Polygamia Fruftranea*, florets of the difk hermaphrodite, thofe of the radius neuter, as in *Centaurea*, *Sclerocarpus*, *Rudbeckia*

19. *Polygamia Segregata*, many partial cups contained in the common calyx, which feparate and furround the flofcula, as in *Echinops*, *Gundelia*, *Sphæranthus*, &c.

20. *Trioecia*, have the polygamy or parts of fructification on three different plants, as in *Ficus*, and alfo *Ceratonia*

21. *Felices*, fructification dorfiferous (on the back of the leaf), as in *Afplenium*, *Adianthum*, *Trichomanes*, &c.

22. *Mufci*, anthers without filaments; female flowers diftinct and without piftillum: feeds a naked corculum without cotyledon or tunic. With or without a calyptra or veil, as in *Bryum*, *Hypnum*, *Buxbaumia*, &c.

Obf. To the order Mufci, Gmelin and other botanifts add the following (*Hepaticæ*), comprehending *Marchantia*, as the laft genus of Mufci after Jungermania. Linnæus had left it with Algæ

23. *Hepaticæ*, herbage frondofe in general, the fructification originating from what is at the fame time both ftem and leaf, as in *Marchantia*, *Jungermania*, &c.

24. *Algæ*, root, ftem, and leaf, in one, as *Fucus*, *Ulva*, *Lichen*, &c.

25. *Fungi*, mufhrooms, as in *Agaricus*, *Boletus*, &c.

CLASS CRYPTOGAMIA.

Addenda to the Mufci, in Illuftration of the Fringes of Moffes.

* *Furnifhed with fingle Fringes.*

232. Lettered BOTANY, Plate Fringes of Moffes.

Fig. 1. *Tetraphis*. Fringe of four teeth, as in *Mnium pellucidum*. Thefe are erect, acute, firm, polifhed, and permanent

2. *Octoblepharum*. Fringe of eight teeth, as in *Bryum albidum*. Capfule without an apophyfis

3. *Splachnum*. Fringe of 16 teeth, dilated at the bafe, approaching each other in pairs. Capfule cylindrical, ftanding on a flefhy bafe or apophyfis

PLATE

232. Fig. 4. *Encalypta*. Fringe of 16 linear upright teeth. Veil ample and bell-fhaped

5. *Pterogonium*. Fringe of 16 linear upright teeth. Capfule from a lateral fheath

6. *Grimmia*. Fringe of 16 equi-diftant teeth, dilated at the bafe. Veil cylindrical

7. *Conoftomum*. Fringe of 16 tapering teeth, approaching each other in pairs, and all cohering at the points, as in *Bryum tetragonum*, Dickfon, *Grimmia conoftoma*, Smith Engl. Botany

8. *Dicranum*. Fringe of 16 flat, fomewhat inflected teeth, cloven half-way down

9. *Trichoftomum*. Fringe of 32 linear ftraightifh teeth, approaching each other in pairs, fometimes joined at the bafe in pairs

10. *Tortula*. Fringe of numerous linear teeth, fpirally and repeatedly twifted together

11. *Syntrichium*. In fome fpecies of *Tortula* the teeth are united into a cylinder at the bafe, pierced with numerous holes, upon which fome recent botanifts have founded this new genus

* * *The following Genera are furnifhed with a double Fringe, fome few Species of* Orthotrichum *and one of the* Buxbaumiæ *perhaps excepted.*

Fig. 12. *Orthotrichum*. Capfule terminal. Outer fringe of 16 teeth; inner of 8 or 16 linear ones, fometimes altogether deficient. Veil furrowed

Obf. The fringe is fometimes variable. *Orthotrichum pumilum* has but eight teeth in the outer fringe.

13. *Nekera*. Capfule from a lateral fcaly fheath. Outer fringe of 16 teeth; inner of 16 capillary ones. Veil naked and even

14. *Funaria*. Capfule obovate. Outer fringe of 16 oblique teeth, cohering at the points; inner, of 16 flat teeth. Veil quadrangular

15. *Buxbaumia*. Capfule oblique, gibbous on one fide. Outer fringe of 16 very fhort teeth; inner, membranous and plaited

Obf. In *Buxbaumia foliofa* the outer fringe is fcarcely perceptible; it is reprefented at fig. 16.

17. *Bartramia*. Capfule fpherical, furrowed. Outer fringe of 16 awl-fhaped teeth; inner, membranous, laciniated. Lip depreffed

18. *Mnium*. Capfule terminal, cylindrical, furrowed. Outer fringe of 16 awl-fhaped teeth; inner, membranous, laciniated

19. *Bryum*. Capfule ovate-oblong, fmooth. Outer fringe of 16 teeth, dilated at the bafe; inner, membranous, toothed. Flowers terminal

20. *Hypnum*. Capfule ovate-oblong, from a lateral fcaly fheath. Outer fringe of 16 teeth, dilated at the bafe; inner, membranous, varioufly toothed. Veil fmooth

21. *Fontinalis*. Capfule enveloped in a lateral fcaly fheath. Outer fringe of 16 teeth, dilated at the bafe; inner reticulated

22. *Polytrichum*. Outer fringe of 32 or 64 flat inflexed teeth; inner, a tranfverfe orbicu-

PLATE

lar membrane, affixed to the teeth of the outer. Veil moftly double; the outer hairy

Vide article FRINGE *of* MOSSES, by *Sir J. E. Smith.*

CLASS CRYPTOGAMIA.

Addenda in Illuftration of the Genera of Fungi.

233. Lettered BOTANY, Fungi, Plate I.

Fig. 1. Genus *Agaricus*

234. Lettered BOTANY, Fungi, Plate II.

Fig. 1. Genus *Merulius* (*eburneus*)

233. Lettered BOTANY, Fungi, Plate I.

Fig. 2. Genus *Boletus*
3. *Hydnum*
4. *Clavaria*
5. *Phallus*
6. *Clathrus*
7. *Helvella*
8. *Peziza*

234. Lettered BOTANY, Fungi, Plate II.

Fig. 2. Genus *Cyathus*

233. Lettered BOTANY, Fungi, Plate I.

Fig. 9. Genus *Lycoperdon*

234 Lettered BOTANY, Fungi, Plate II.

Fig. 3. Genus *Sphæria* (*digitata* and *bombardica*)
4. *Tuber*
5. *Rhizomorpha* (*phofphorea*)

233. Lettered BOTANY, Fungi, Plate I.

Fig. 10. Genus *Mucor*

* The preceding are Linnæan genera in the Gmelinian *Syftema Naturæ*, including the *Fungi* genera of the 12th edit. Linn., with others felected by Gmelin from Perfoon, Willdenow, Tode, and other writers on this tribe of Cryptogamia. To thefe the contributor of the article FUNGI for this Cyclopædia has added the following genera:

234. Lettered BOTANY, Fungi, Plate II.

Auricularia (*reflexa*)
Nidularia (*campanulatus*)
Trichia (*denudata* and *nuda*)
Uredo (*fegetum*), known in agriculture by the name of *fmut*
Æcidium (*anemones*)

BOTANICAL ARRANGEMENT OF TOURNEFORT.

* *Section, Herbaceous Plants and Under-fhrubs.*

† *Petalled.*

A. ‡ *Flowers Simple, Monopetalous, Regular.*

235. Lettered Tournefort's Syft. Botany, Plate I.

No. 1. Clafs 1. *Bell-fhaped*, as in *Belladona*, *Campanula*, and *Convolvulus*. Letter *a* denotes the flower, *b* thefr uit, *c* the feeds, in the diffections of the different plants intended to illuftrate thefe claffes

235 & 236. Lettered Tournefort's Syft. Botany, Plate II.

No. 2. Clafs 2. *Funnel-fhaped*, as in *Borago* (*officinalis*) *Solanum dulcamara*, &c.:
a the flower, *b* the fruit, *c* the feeds

‡ ‡ *Simple, Monopetalous, Irregular.*

236. No. 3. Clafs 3. *Perfonate*, as in *Arum*
a the flower, *b* the fruit, *c* the feeds

236. No. 4. Clafs 4. *Labiate*, as in *Salvia*, *Lamium*, *Thymus*
a the flower, *b* the fruit, *c* the feeds

‡ ‡ ‡ *Simple, Polypetalous, Regular.*

237. Lettered Tournefort's Syft. Botany, Plate III.

No. 5. Clafs 5. *Cruciform*, as in *Raphanus* (*Raphaniftrum*)
Thlafpi (*Burfa Paftoris*) *Chelidonium* and *Potamogeton*
a the flower, *b* the fruit, *c* the feeds

237. No. 6. Clafs 6. *Rofaceous*, as in *Rofa*, *Nymphæa*, *Hypericum*
a the flower, *b* the fruit, *c* the feeds

238. Lettered Tournefort's Syft. Botany, Plate IV.

No. 7. Clafs 7. *Umbellate*, as in *Phellandrium*, *Foeniculum*
a the flower, *b* the fruit, *c* the feeds
8. 8. *Caryophyllous*, as in *Caryophyllus*
a the flower, *b* the fruit, *c* the feeds
9. 9. *Liliaceous*, as in *Crocus*, *Narciffus*
a the flower, *b* the fruit, *c* the feeds

‡ ‡ ‡ ‡ *Simple, Polypetalous, Irregular.*

239. Lettered Tournefort's Syft. Botany, Plate V.

No. 10. Clafs 10. *Papilionaceous*, as in *Pifum*, *Ervum*, &c.
a the flower, *b* the fruit, *c* the feeds
11. 11. *Anomalous*, as in *Aquilegia*
a the flower, *b* the firft, *c* the feeds

B. ‡ *Flowers Compound, Polypetalous, Irregular.*

239. No. 12. Clafs 12. *Flofculous*, as in *Echinopus*
a the flower, *b* the fruit, *c* the feeds
13. 13. *Semi-flofculous*, as in *Leontodon*

240. Lettered Tournefort's Syft. Botany, Plate VI.

No. 14. Clafs 14. *Radiate*, as in *Helianthus*, *After*
a the flower, *b* the fruit, *c* the feeds

† *Apetalous* (*without petals*).

15. 15. *Apetalous Staminiferous*, as in *Avena*
a the apetalous flower, ftamen-bearing calyx, or ftaminiferous organ, *b* the fruit, *c* the feed

PLATE

41. Lettered Tournefort's Syſt. Botany, Plate VII.

No. 16. Claſs 16. *Apetalous ſeminiferous*, as in *Felix*, *Lichen*, &c.
a the ſeminiferous organs, (theſe having, according to Tournefort, no flowers,) *b* the fruit, *c* the ſeed

17. 17. *Apetalous, without apparent fruit*, as in *Fungi*, *Muſci*, &c.

* * *Section Trees and Shrubs.*

† *Apetalous (without petals).*

Irregular.

No. 18. Claſs 18. *Apetalous*

42. Lettered Tournefort's Syſt. Botany, Plate VIII.

No. 19. Claſs 19. *Amentaceous*, as in *Quercus*, *Pinus*, &c.

† *Petalled.*

Irregular.

No. 20. Claſs 20. *Monopetalous*, as in *Heydyſarum*

Regular.

43. Lettered Tournefort's Syſt. Botany, Plate IX.

No. 21. Claſs 21. *Roſaceous*, as in *Rubus*.

22. 22. *Papilionaceous*, as in *Piſum*, *Colutea*, &c.

Obſ. The importance of the Syſtem of Tournefort, the outline of whoſe claſſification is here laid down, will be beſt underſtood by thoſe who are aware of the attachment of the French botaniſts, even of the lateſt times, to the method of this early author: a botaniſt, whoſe labours preceded thoſe of Linnæus by nearly half a century.—It has been truly obſerved, that Tournefort is to the French in the ſcience of botany, the foundation-ſtone upon which all their ſyſtems are eſtabliſhed. This predilection in favour of their own ſyſtems, to the excluſion of that the Swediſh naturaliſt founded upon the ſexual organs of plants, may yet have its revolution; but that in the preſent time is more than can be well expected. As the botanical department of this Cyclopædia has been almoſt from the commencement allotted to one of the moſt able profeſſors in the ſcience, it is very far from the intention of the writer of the preſent article to enter into the comparative merits of the prevailing ſyſtems of this time, the Linnæan in Britain, under the auſpices of its many learned advocates, and that of the French, founded on a "natural method" not very diſſimilar from that of Tournefort, and as improved by Juſſieu and Gærtner. We only wiſh to offer ſome apology for the greater number of plates devoted to the ſyſtem of the celebrated corolliſt M. Tournefort than to the ſexual ſyſtem of Linnæus; the latter being a naturaliſt whom from adoption we may almoſt deem our own, and we muſt confeſs with all his imperfections our moſt favourite author.

The great talents of one of our ableſt and moſt experienced botaniſts at this period, we are well aware have been directed to the advancement of a "natural method*;" perhaps even we might be almoſt juſtified in terming him one of the great ſupporters of this method, not in this country alone but throughout Europe: while the labours of Juſſieu, Jaume St. Hilaire, and others, have gone far towards the formation of a method conſtructed upon the natural affinities of plants, and on their fruits and ſeeds eſpecially; characters which, with the corolla, calyx, and other organs of the flower conſidered generally, it will be perceived had formed the baſis of that ſyſtem which was laid down by Tournefort.

After what we have advanced upon this intereſting ſubject, it might have been thought adviſable to appropriate other plates to the elucidation of what is underſtood by a natural method; but that, alas! would be impoſſible. Much remains undone, and it is only by a very long and arduous courſe of reſearch and inveſtigation that any ſyſtem of material extent founded on that method is to be expected. "Hitherto," ſays M. de Candolle, one of its moſt popular promoters, "we have arrived only at the baſis of this ſyſtem, and not at the reſult: it exiſts rather in the converſations of botaniſts than in their books, and remains yet among the number of thoſe opinions which Bacon calls floating." *Vide De Candolle de Taxonomie.*

Under theſe circumſtances, the plates appropriated to the illuſtration of Tournefort's arrangement of Botany will not be thought devoid of intereſt, and may be indeed conſidered of material uſe to the early botaniſt as well as general reader, in uniſon with thoſe intended for the illuſtration of the claſſes and orders of Botany as laid down and eſtabliſhed by the great Linnæus.

VEGETABLE ANATOMY.

244. Lettered Vegetable Anatomy, Plate I.

Fig. 1—8. Diſſections of the cortex or bark of various plants, of the natural ſize and magnified, deſigned to ſhew the ſtructure of the layers of which they are compoſed, &c.

245. Lettered Vegetable Anatomy, Plate II.

Diſſections explanatory of the diſpoſition of the layers which appear internally in the ſtems or branches: fig. 1, 2, 3. horizontal ſections; fig. 4, 5. perpendicular ſections; fig. 6, 7, 8. ſhew the longitudinal diſpoſition of the veſſels upon ſtripping off the outer bark or cortex

Fig. 9—13. Various appearances and diſſections of the buds of plants. Fig. 14—17. of the flower, &c.

19. A bulbous root, ſhewing the exterior imbrications

18. A horizontal ſection of a bulbous root, ſhew-

* Robert Brown, Eſq. who, without rejecting the ſexual organs as uſeful auxiliaries, regards more particularly the germination of plants, with the number and form of the Cotyledons, as eſſentially characteriſtic in a ſyſtem founded on a natural claſſification.

PLATE

245. ing the concentric layers of which it is composed

Fig. 20. Perpendicular section of a bulbous root

MINERALOGY.

246. Inscribed NATURAL HISTORY, Plate I.

View of Mount Ætna, from Spallanzani's Work.

This is a general view of Mount Ætna, the adjacent country and the sea; and is intended to shew the effects occasioned by the eruption of the volcanic matter at different times. A points out the loftiest summit of the Mount. H is Nicolosi, and marks the Mount Rosso or Red Mountain, formerly a plain, but in 1699, a new vertex opened in it, and discharged the dreadful torrents of lava which overflowed the land, till reaching the sea, it formed the promontory of lava in the sea extending as far as letter Y. G, near this new opening of Ætna, is the mountain Montpelieri or Montpileri

Various other interesting spots are marked in the plate, for which consult the article ÆTNA, *Mount.*

246. Inscribed NATURAL HISTORY, Plate II.

A View of the Crater of Mount Ætna.

A A A One edge of the lava of 1787, which issued from the upper crater. B B the circumference of the crater, with its cleft C C through which the internal part is discernible. D the flat bottom of the crater. E the aperture in the bottom through which the larger column of smoke F F arose. G G is that part of the edge of the crater from which its internal part is best seen. H H is the smaller column of smoke to the north-east. *Vide* article *Mount* ÆTNA for further explanation

247. Inscribed NATURAL HISTORY, Plate V.

View of Mount Vesuvius, as seen from the Bay of Naples. From an original sketch made in the year 1797, by R. Duppa, Esq.

248. Inscribed NATURAL HISTORY, Plate IV.

View of the Crater of Mount Vesuvius. Drawn by the same hand, and at the same time as the preceding.

249. MINERALOGY, Plate II.

Basalt. The Mountain of Aisa, called La Coupe, or the Col d'Aisa, near the village Entrague, in the Viverrais, above the torrent of Volant

This plate affords an example of the formation of basaltic columns, and illustrates the hypothesis of the Huttonian system, according to which the basaltic matter has been originally of volcanic origin, and while in a state of fusion cast out of the crater of the mountain. In its progress this lava has formed a wavy channel down the mountain side. According to St. Fond, this is the most remarkable and best characterized crater in all the Viverrais. The ends of the columns may be distinctly seen before the basalt reaches the river.

GEOLOGY.

250. GEOLOGY, Plate I.

Fig. 1. The upper figure in this Plate exhibits the dip, dyke, fault, slip, trouble, &c. described and referred to in the article COAL

251. GEOLOGY, Plate II.

Fig. 1—10. Sections of various *Strata*

252. GEOLOGY, Plate III.

Fig. 1. *Strata:* being a sketch of the arrangemen[t] of the strata through England, by Mr R. Bakewell. Lat. 54° 35′ to 54° 45′.
2. Section of the strata through part o[f] Dorsetshire and Devonshire, by Mr. R Bakewell
3. Perpendicular strata
4. Horizontal strata
5. Inclined strata, consisting of greywacke clay-slate, compact felspar, porphyry sienite, trap, clink-stone and granite, valley of Long Sleddale, Westmoreland
6. Undulate strata: shewing the wavy structur[e] of the beds of slate, called shillet, i[n] Devonshire

253. GEOLOGY, Plate IV.

Fig. 1, 1. Metallic veins exemplified, with a "rider," &c.; and also the intersection (or "cutting-off") of metallic veins
2. Columnar and amorphous basalt, intersected by basaltic dykes
4. Lime-stone broken and inclosed in basalt, seen in a basaltic rock on the coast of Antrim Whinstone dykes, or basaltic veins, passing through chalk, and changing it into marble—under figure 4.

(*See article* GEOLOGY. *Suppl.* Vol. XXXIX.)

Addenda to the Geological Illustrations.

254. Plate ICHTHYOLITE, or Ichthylogical Remains.

Mineralized remains, or impressions of fishes, on black shistose slate, found at Isleben, in Germany

255. FOSSILS, Extraneous, Plate I.

Fig. 1. Mineralized remains of an encrinus, Encrinus liliiformis, or "stone lily," in relievo, on a slab of stone
2. Transverse section of the lily-head
3. The lily-head half broken through transversely
4. Bottom of the lily-head, shewing the peduncle by which it is connected to the main stem of the encrinus

CRYSTALLOGRAPHY.

256. Lettered CRYSTALLOGRAPHY, Plate I.

Fig. 1—7. Various forms of the crystals of adamantine spar
8—16. Ditto of felspar

262. Lettered CRYSTALLIZATION, Plate VII.

Fig. 27. The *Octohedron*, regularly formed
13. The *Tetrahedron*, regularly formed

PLATE

62. Fig. 5. The *Hexahedral prifm*, or equiangular fix-fided prifm

12. The *Rhomboidal dodecahedron*

14. The *Pyramidal dodecahedron*, or double fix-fided pyramid

57. CRYSTALLOGRAPHY, Plate II.

Fig. 17—21. Mechanical diffection of an *hexahedral cryftal of calcareous fpar*, and extraction of the primitive cryftal, or nucleus

Obf. *Lettered fig.* 17—21. *Plate* II. *Cryftallography. Defcribed in article* CRYSTAL, Vol. X. Part II. *but erroneoufly referred to as fig* 1—5. *Plate* I.

22, 23. Mechanical divifion of the *dog's-tooth fpar*, erroneoufly fig. 6, 7. Plate I.

Fig. 24. *Rhomboids of calcareous fpar*, a fecondary cryftal, with the primitive nucleus

0. CRYSTALLOGRAPHY, Plate V.

Fig. 56. The bafe of the *fix-fided prifm*, divided by fections parallel to each of its fides, and producing the *triangular prifm*, the ultimate form obtained by mechanical divifion

9. CRYSTALLOGRAPHY, Plate IV.

Fig. 48, 49. The *cube* divided by fections parallel to the fides, and producing a feries of fmaller cubes, confidered as the form of the integrant molecule

7. CYSTALLOGRAPHY, Plate II.

Fig. 26. The *primitive rhomboid* of the tourmaline, with its diffection. This cryftal is divifible both in the direction of the fix faces, and in that of the fhort diagonals; by which latter fections the rhomboid is reduced to fix tetrahedrons, furrounding the nucleus, as here reprefented

Decrements of the Edges of the Cryftals.

'. & 258. CRYSTALLOGRAPHY, Plates II. & III.

Fig. 27, 28. The *rhomboidal dodecahedron*, which figure may be formed from a cubic nucleus, by the fuperpofition of decreafing laminæ

CRYSTALLOGRAPHY, Plate III.

Fig. 29. Congeries of cubes, confifting of integrant molecules, forming the cubic nucleus, with the pyramids raifed on three of the faces

CRYSTALLOGRAPHY, Plate II.

Fig. 27. The form of the cryftal, produced by the combination of thefe integrant molecules, when complete

Decrement in Breadth and Height.

CRYSTALLOGRAPHY, Plate III.

Fig. 30. A cryftal of *iron pyrites, with twelve pentagonal faces*, in which the two kinds of decrement are combined

Fig. 31. The cubic nucleus of this variety is fhewn

32. The formation of the cryftal by decrements

33. Decrement of the dog's-tooth fpar, (the metaftatic cryftal of Haüy,) reprefented complete in Plate 257. fig. 22. The prefent figure fuppofes the hypothefis of a decrement by two ranges in breadth. It reprefents the upper pyramid of this cryftal placed on the upper planes of the primitive nucleus, which being partly vifible, difclofes more clearly the progreffive effects of the decrement by two ranges

34. A fecondary cryftal, which is a rhomboid much more obtufe than the nucleus, is reprefented as furrounding the nucleus in the variety of calcareous fpar, called by Haüy, equiaxe

The nucleus (prefumed to be the primitive rhomb of carbonate of lime) progreffively diffected to explain its ftructure

The face at letter A, fig. 35, fhews the fame face of the rhomb as is reprefented in fig. 34, but fymmetrically divided, and the fuite fhews the gradual divifion of the rhomb, by mechanical feparation down to letter I *d*

258. CRYSTALLOGRAPHY, Plate III.

Fig. 36. *Decrements on the angles of a cryftal*, fhewn in the regular *octohedron* formed on a cube

259. CRYSTALLOGRAPHY, Plate IV.

Fig. 37. The arrangement of the integrant molecules on one of the triangular faces of the octohedron

259. CRYSTALLOGRAPHY, Plate IV.

Fig. 38. Rhomboid cryftal

39. Another example of the decrements on the angles, exemplified in the diffection of the *rhomboid*, fig. 38., which differs fomewhat from that of the cube, producing a very obtufe rhomboid, encircling the nucleus; found among the fecondary cryftals of oligifte iron ore

Further illuftration of the different variations, of which the decrements of the *rhomboid*, both of the fuperior and inferior angles, are fufceptible. The rhomboid is fhewn at fig. 45.; the diffections at fig. 46, 47.

Intermediate Decrements.

Fig. 48. A parallelopiped undergoing a decrement, by two ranges on the angle of its bafe

49. A cryftal, in which all the three decrements round the fame folid angle are intermediate

50. Another example of intermediate decrement in one of the faces of a cubic nucleus, taking place on the angles, by the fubtraction of double molecules

51. The cubic nucleus, marking the decrements parallel to the lines *k m*, &c. by fubtrac-

PLATE
259. tion of double molecules, in fuch a manner as that three ranges be taken away in the breadth, and one in height; fo that the decrements will be both intermediate and mixed

52. A polyhedral cryftal of thirty faces, produced by the ceffation of decrementation, before the formation of the pyramid round each face of the nucleus

53. Example of intermediate decrements on the two lateral angles of a rhomboid, (as at fig. 47.), the decrements taking place by ranges of double molecules, producing in the complete refult a folid of twelve faces, difpofed fix and fix towards each fummit, as in one variety of calcareous fpar, or double-pointed dog's-tooth fpar

Compound fecondary Forms of Cryftals.

Fig. 54. A fecondary cryftal, an *icofahedron* bounded by eight equilateral triangles, and twelve ifofceles triangles. Occurs in iron pyrites

55. A calcareous fpar (*Analogique* of Haüy), compofed of twenty-four trapezoidal faces, fix of which are vertical, and twelve others difpofed fix and fix. The different trapezoidal faces are fhewn in the figure

260. CRYSTALLOGRAPHY, Plate V.

Fig. 56. The end of the regular fix-fided prifm, which, for its molecule, prefents us with the triangular, or three-fided prifm

57. A cubic nucleus divided into its cubic molecules

59. Superior face of the fecond lamina, A
Ditto, further mechanical divifion of the integrant molecules, B
Ditto, ditto, C

58. Explanation of vacuities on the edges of a cryftal, given by Haüy

60. An oblique prifm with rhomboidal bafes, fo fituated that the faces A D, *a d*, and C D, *c d*, are vertical; and B D are the acute angles of the bafe, and that the latter proceed in an afcending direction from A to C
Interfect this prifm into halves, by means of a plane paffing by the diagonals, drawn from B to D, and from *b* to *d*, fo that the half fituated on the left remaining fixed, the other is reverfed without being feparated, and the figure prefented will be as fhewn at fig. 61.

62. Another example of grouping, in which cryftals are inferted into each other, is extremely common. This combination is illuftrated by a cube, and M N *r*, an equilateral triangular facet, produced by a decrement of one range round the angle A

63. A fecond cube modified in the fame manner, and affixed to the other by its correfpondent facet, will afford the double cryftal reprefented

PLATE

To illuftrate the Notation of Cryftals.

Fig. 64. Reprefents an oblique parallelopiped, th faces of which have angles of differe meafures

65. The effect of decrement fhewn

66. An oblique parallelopiped

67. Primitive molecules

68. Bibinary felfpar of Haüy

69. Primitive form of a rectangular prifi which has oblique-angled parallelograr for its bafes, one of which is longer

70. The oblique prifm, with rhomboidal bafes

71. The rectangular prifm, with rectangul bafes

72. The rectangular prifm, with rhomboid bafes

73. The rectangular prifm, with fquare bafes

74. The cube

75. The moft common variety of chryfoberyl, cymophane, the nucleus of which is regular parallelopiped, as reprefented fig. 71.

76. The prifm

261. CRYSTALLOGRAPHY, Plate VI.

Fig. 77—84, &c. Several figures inferted to illuftra the manner in which the fymbo employed in the definition of t various modifications of cryfta by Haüy, and other cryftall graphers are expreffed

80. Octohedron, with fcalene triangles

81. Octohedron, another variety

82. The regular octohedron

83, 84. The primitive octohedron, compofed eight ifofceles triangles fimilar, four a four each

85. The tetrahedron when become a primiti form

86. The regular fix-fided prifm

87. The fame, in which three folid angles, tak alternately, are replaced by faces, whi the intermediate angles remain untouche

88. Rhomboidal dodecahedron, in which ea folid angle is compofed of three plan and may be affimilated to a fummit of t obtufe rhomboid

89. Primitive form of the tourmaline

90. One variety of the tourmaline

Supplemental Plate, lettered CRYSTALLIZATION, Plate VI

262. CRYSTALLIZATION. See MINERALOGY, *Appendix*

Fig. 1. Cube
2. Rhomb
3—5. 29. Varieties of the Prifm
6. Pyramid
7, 8. Table
9. Icofahedron
10. Pentagonal Dodecahedron
11. Lens
12. Rhomboidal Dodecahedron
13. Tetrahedron
14. Double fix-fided Pyramid

PLATE

262. Fig. 27. Regular Octohedron
16. *Truncation* on the angles
17. on the edges
18. *Bevelment* on all the edges
19. 30. on all the lateral edges
28. on the angles
Acumination, the acuminating planes
20. at each angle set on the lateral planes
21. 26. on the lateral edges
22. 24. on the lateral planes
23. on the lateral angles
25. on the alternating lateral planes
29. double eight-sided pyramid, four planes at each extremity set on the alternate lateral edges
31. double six-sided pyramid, with the planes joined obliquely, or metastatic crystal

The primitive Forms of Crystals are,

Fig. 1. The Cube
2. Rhomb
7, 8. Rectangular Table
27. Octohedron
13. Tetrahedron
5. Hexagonal Prism
12. Rhomboidal Dodecahedron
14. Dodecahedron with triangular faces

The integrant Molecules are,

Fig. 13. The Tetrahedron
29. Trihedron
1. Cube

Instruments employed in the Study of Crystallography and Mineralogy.

261. Fig. 91. Nicholson's instrument for determining the weight or specific gravity of solid bodies
92. B. An instrument for determining the electricity of minerals
92. A. An instrument for determining the electricity of the tourmaline
93. Goniometer for measuring the angles of crystals
(*Vide* MINERALOGY, *Appendix*, Vol. XXXIX. —*Vide also article* CRYSTAL, Vol. X.; *and* CRYSTALLIZATION, *Supplemental Vol.*)

Appendix to Geology, Mineralogy, Mining, &c.

263. Plate MINERALOGY, MINING.
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253. Represented on Plate IV. GEOLOGY.
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250. Mining Lamps, Plate I. GEOLOGY.
Fig. 5, 6. Sir Humphrey Davy's Wire Gauze

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Safety Lamp, as made by Mr. Newman, Lisle Street, Leicester Square (*See* WIRE GAUZE)

250. Fig. 2, 3. Dr. Clanny's Safety Lamps
4. Steam Safety Lamp

*** By attending to the above classification, the whole of those Plates of Natural History, which the proprietors have allotted to this Cyclopædia, may be readily reduced to numerical order, and be by that means, it is presumed, more easily distinguished when required for reference than by the original plan, in which the plates of each section were lettered separately from the rest. They now follow each other, not only in numerical order throughout their whole extent, but also in the order of the Linnæan System, as nearly as the number of plates appropriated to the respective Sciences would conveniently allow. The miscellaneous nature of some few plates, which it has been lately thought desirable by the proprietors to introduce, renders it impossible to place them strictly in the order of system.

ERRATA

ON THE

PLATES OF NATURAL HISTORY.

Some few errors having been committed by the writing engravers in lettering the names upon the plates of Natural History, which it will be very desirable to correct, the reader is requested to observe, that wherever the names upon the plates are found at variance with those inserted in this printed index, the preference is to be invariably given to the latter; and that the names upon the plates may be corrected by a reference to this index.

The following errors occur to us in passing over the plates for the purpose of composing the present classification.

QUADRUPEDS.

19. *For* Brasiliar Weesel, *read* Brasilian Weesel
26. Taguan Squirrel, *r.* Taquan S.
29. Mospymæus, *r.* Mos pygmæus
31. Antilope Grimmea, *r.* Ant. Grimmia

BIRDS.

46. *For* Ramphastos Aracani, *read* R. Aracari
G. Crotophagi, *r.* G. Crotophaga
52. Merops Novæ Zelandiæ, *r.* Novæ Selandiæ
53. Certhia coccina, *r.* C. coccinea
Certhia cærulia. *r.* C. cærulea
54. Anas Olot, *r.* A. Olor
56. Anas Creca, *r.* A. Crecca
Manderine Drake, *r.* Mandarine Dr.
57. Genus Apterodytes, *r.* G. Aptenodyta
58. Gen. Diomedia, *r.* Diomedea
D. Chiororynchos, *r.* Chlororhynchos

PLATE

61. *For* Gen. Laurus, *read* Gen. Larus
62. G. Phenicopterus, *r.* Phœnicopterus
67. Charad. africarius, *r.* C. apricarius
68. Fulica porphyris, *r.* F. porphyrio
71. Genus Dodo (*Latin name*), *r.* G. Didus
73. Meleagris gallipavo, *r.* M. Gallopavo
78. Tetrao ferruginous, *r.* T. ferrugineus
79. Columba Crythroptera, *r.* C. erythroptera
81. Turdus perſpicalatus, *r.* T. perſpicillatus
82. Ampelis Pompodora, *r.* A. Pompadora
88. R. headed Swallow, *r.* Rufous-headed Swallow
Acculeated Swallow, *r.* Aculeated Swallow

Reptiles.

101. *For* Anguis Coraline, *read* A. Corallinus
A. Jamacienſis, *r.* A. Jamaicenſis
102. Amphiſbæna fulginoſa, *r.* A. fuliginoſa
103. Snowted Langaya, *r.* Snouted L.

Fishes.

105. *For* Genus Stromateus, *read* Gen. Stomateus
Sternoptyx diaphæna, *r.* Sternoptyx diaphana
Genus Anarhicas, *r.* Gen. Anarhichas
112. Sparus Surinaminſis, *r.* Sparus Surinamenſis
Sparus faſiatus, *r.* Sparus faſciatus
116. G. Scomber Mackerel, *r.* G. S. Mackarel
117. Ditto *r.* Ditto
119. Platyſtachus anguilaris, *r.* Platyſtachus anguillaris
120. Salmo bimaculotus, *r.* S. bimaculatus
S. Gaſtropelecus, *r.* S. Gaſteropelecus
121. Fiſtularia tobaccaria, *r.* F. tabacaria
122. Genus Atherine (*Latin name*), *r.* G. Atherina
123. Clupea Triſſa, *r.* C. Thriſſa
C. Phoxinus Minnew, *r.* C. P. Minnow

PLATE

124. *For* Headlines for Order Branchyoſtegi, *read* Order Branchioſtegi
126. Pegaſus draco, *r.* P. draconis
129. Headlines for Order Chondrophrygii, *r.* O. Chondropterygii

Insects.

136. *For* Boſtrichus pubiſcens, *read* B. pubeſcens
Ptinus ſcotias, *r.* Ptinus ſcotius
P. aſſelatus, *r.* P. teſſellatus
P. faccinicornis, *r.* P. pectinicornis
137. Anthrenus ſchrophulariæ, *r.* A. ſcrophulariæ
138. Caſſida graſſa, *r.* C. groſſa
141. Pauſus fichteli, *r.* P. Fichtelii
160. S. gigas, *r.* Sirex gigas
S. juveneus, *r.* Sirex juvencus
S. lobata, *r.* Sphex lobata
163. No. 13. Tipula ichneumonea, *r.* Diopſis ichneumonea
164. Rhagis ſcolopacea, *r.* Rhagio ſcolopacea
168. Headlines G. Frombidium, *r.* G. Trombidium
12 F. aquaticum, *r.* 12 Trombidium aquaticum
13 F. abſtargens, *r.* 13 Trombidium abſtergens

Worms.

178. *For* Headlines for Vermes, Order Inteſtata, *read* Order Inteſtina

Shells.

192. *For* Tellina fabulata, *read* Tellina fabula
Tellina bimaculatu, *r.* Tellina bimaculata
202. Headlines for Conchology, Order Volutæ, *r.* Conchology, Genus Buccimum — Genus Strombus
226. Paramœcium, *r.* Paramecium
Rolipoda pyrum, *r.* Kolpoda pyrum

PLATES. VOL. VI.

ANCIENT AND MODERN ATLAS.

Plate
I. Ancient Geography—Imperium Car. Mag. ad finem fæculi poft Chrift. VIII.

A few copies, only, of this Map were publifhed with the parts of the Cyclopædia. The proprietors having afterwards determined to engrave the maps on a larger fcale, it was cancelled, and a Map of the World, as known to the ancients, fubftituted in its ftead as the firft of the Ancient Atlas.

GEOGRAPHIA ANTIQUA.

Tabula
I. Orbis Veteribus Cognitus
II. Populi, Urbes, &c. in Græcia, Thrafia, et Afia, quorum meminit Homerus
III. Britannia Romana, cum Hibernia et infulis adjacentibus
IV. Peloponnefus, quæ antea Apia, Pelafgia, et Argos, antequam Romanæ ditionis fuit, &c.
V. Hellas, five Græcia Propria, Theffalia et Epirus, antequam Romanæ ditionis fuerunt
VI. Macedonia et Thracia, antequam Romanæ ditionis fuerunt
VII. Afia Peninfularis, cum Infulis adjacentibus
VIII. Ægyptus, provincia Romana Imperialis
IX. Lybiæ, vel Africæ, ora borealis
X. Italiæ Regio Alpina, quæ vulgo dicitur Gallia Cifalpina
XI. Italia Media, vel Italiæ propriæ pars borealis, ante divifionem ab Augufto factam
XII. Italia Ulterior, cujus pars Auftralis Magna Græcia, ob Græcorum colonias, dicta, ante divifionem ab Augufto factam
XIII. Sicilia, provincia Romanorum, cum Infulis adjacentibus
XIV. Italia in regiones undecim ab Augufto defcripta, cum Infulis Corfica et Sardinia
XV. } XVI. } Imperium Romanum
XVII. Hifpania Romana
XVIII. Galliæ, ficut ab Augufto divifæ, pars meridionalis
XIX. Galliæ, ficut ab Augufto divifæ, pars feptentrionalis. Additur, Gallia qualis fuit ineunte feculo quinto Æræ Chriftianæ in 17 provincias difpertita
XX. Rhætia et Noricum, provincæ Romanorum
XXI. Germania Magna, quæ nunquam Romanis paruit
XXII. Terra Filiorum Ifraelis, antequam in duo Regna difpertita fuit, cum Terra Philiftæorum, parte Phœnices, &c. Etiam, Judæa et Regiones finitimæ circiter initium Æræ Chriftianæ.

MODERN ATLAS.

The World, Eaftern and Weftern Hemifpheres
The World on Mercator's Projection
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Scotland
Canals, Navigations, and Railways of Great Britain
Ireland
Sweden, Denmark, and Norway
Ruffian Empire
North part of Ruffia in Europe
South part of Ruffia in Europe
The Seven United Provinces
France
Spain and Portugal
Portugal
Switzerland
Alpine Country, North Italy
South Italy
Pruffia
Germany, Eaft
Germany, Weft
Hungary
Environs of Conftantinople
Asia
Arabia
Perfia
Hindooftan
China
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North America
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United States
Weft Indies

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INDEX OF THE PLATES.

Containing a List of all the Subjects represented on the Plates, arranged in alphabetical order, and classed under the several Sciences or Departments to which they pertain; together with References to the particular Plate and Figure where each Subject is delineated.

The Roman Numerals denote the *Plate;* the Arabic Numerals, the *Figure.*

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ERRATUM,

The following Plate has been accidentally omitted, both in the Catalogue and in the Index. The Binder is requeſted to place it immediately after the other Plate of Architecture numbered XV.

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